PSYCHO-SOCIAL INTEGRATION OF THE HANDICAPPED

(A Challenge to the Society)

ANIMA SEN

The International Year for the Disabled Persons, celebrated in 1981, ushered in a worldwide concern for the position of the handicapped in society. A nation-wide need was felt to undertake action-oriented programmes to ractify situations where the disabled are invariably led to be handicapped in the social milieu. Any worthwhile attempt to integrate the handicapped into the society calls for an appropriate understanding of the multifaceted problems of the disabled. Differential dynamics of handicap involves an understanding of the magnitude of the problem, the causes and consequences of disability in the context of physical and psychological characteristics and social development.

The author's interest in these areas supplemented by her extensive and cumulative academic and research experiences in the field of disability and handicap over the last two decades has resulted in a coherent analysis of the phenomena of handicap—the concept, the prevalence and the prospects—as pertaining to a developing nation, particularly India. The relevant findings and conclusions have now been summarised in the form of this readable and easily comprehensible publication which is intended to serve as a text-cum-resource book covering the four major categories of the handicapped—the blind, the deaf, the orthopaedically handicapped and the mentally handicapped—a necessity long felt by teachers, research scholars, and students of the several disciplines of social science, as also of special education, B. Ed, and M, Ed, and social workers at other educational and social welfare institutions in India.

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PSYCHO-SOCIAL INTEGRATION OF THE HANDICAPPED:
A CHALLENGE TO THE SOCIETY

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A CHALLENGE TO THE SOCIETY

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To
THOSE *HANDICAPPED*
WHOSE DISABILITY FAILS TO DETER THEM
FROM ACHIEVING EXCELLENCE.

Foreword

The existence of disabled members is not uncommon in any society. The disability in any person of any kind—irrespective of its congenital or acquired nature, could also turn into a most difficult handicap in the social context, unless positive efforts to ensure otherwise, are made by members of the concerned families and society. It must be realised that the disabled are as much an integral part of the society as anybody else. Only proper care, affection, love, and understanding can blossom them into independent adult individuals capable of contributing towards families, their societies and the nation at large.

Ample examples are available of courageous men and women who, despite their disabilities, have made their mark in society not by resigning to their fate, but by accepting the challenge to develóp their potentialities to the greatest extent. Notable amongst them is Dr. Hellen Keller, who in spite of her multiple handicaps was able to overcome all the barriers and proved a beacon light for all the handicapped of the world.

Pre-Independence India was not particularly aware of the services and the special needs of the disabled. Later, the Constitution of India recognised their rights to be the same as those of normal individuals. Thereafter, the Government of India as well as other voluntary agencies have taken definite steps to unfold the potentialities of the disabled. Such efforts received an impetus during 1981, the International Year of the Disabled Persons. The Government of India decided to reserve 3 per cent of the jobs of categories C and D exclusively for the disabled in order to make them economically independent.

Today understanding the problems of the disabled constitutes an important part of the education of the students of the several disciplines. It is thus essential to make available a comprehensive treatise on the problems of the disabled in the Indian context. With this objective in mind, Dr. (Mrs.) Anima Sen, Professor of Psychology at the University of Delhi, attempts to fill this long felt gap, by teachers, research scholars and students of Psychology, Education, Social Work, Special education and other related fields—by summarizing her exhaustive and relevant researches in the form of this publication: "Psycho-social Integration of the Handicapped: A Challenge to the Society".

The author deserves to be congratulated for her meticulous work and painstaking research in a very difficult area. The book very ably covers various categories of disability such as, visual impairment, hearing impairment, orthopaedic impairment and mental handicap.

This poineering work has broken new vistas in Psychological field. The materials scattered at various places have been collected and put together to give a broader perspective of disability and handicap. She makes a clear distinction between impairment, disability and handicap. According to her, impairment of any particular type is a fact. However, for want of adequate understanding on the part of the members of the society, and in the absence of adequate services for them, the disability tends to be converted into a handicap.

The Book has been divided into four parts. The first part deals with the concept, prevalence, and multifaceted adjustment problems encountered by the handicapped. The second part is devoted to different categories of the handicapped, *viz.*, the blind, the deaf and the orthopaedically handicapped, from different perspectives, including aetiology, psychological and social development, and educational and rehabilitational possibilities. Similarly, part III critically examines the problem of mental handicap in its various dimensions. Finally, part IV discusses the role of family, teachers and peer group and community as an integrative process for the rehabilitation of the handicapped in the society so that he proves an asset.

The references given at the end of the book would serve as an excellent guide to scholars who want to consult materials pertaining to disability and handicap. The planners and administrators would have a ready access to a fund to statistical and empirical data available to prepare realistic plans and schemes.

The thrust of the book is that the professionals and others have realised that by providing adequate training and services to the handicapped would enable them to live a useful life and not to make them parasitic on the society. The author makes a fervent appeal that this concern should be spread among all to make them conscious of their responsibilities towards the problem.

The analysis based on empirical data forcefully brings out an integrated approach to tackle the problem by parents, teachers, members of the peer group and professionals. The author also urges that the governmental plans and schemes should be properly monitored and implemented to outreach the services to the handicapped in rural and tribal areas.

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As the writing of this book went along with my regular teaching and other professional activities, more than three years' continuous work was needed to complete the preparation of the manuscript. As it is true for any worthwhile project, cooperation, encouragement, help and assistance received from a number of persons and organisations, made it possible to reach its final stage. It is rather difficult, if not impossible, to express appreciation and gratitude to all those concerned, individually.

The most prominent cooperation was received from the NSSO who obliged me by sending a report of its 1981 sample survey. The facts and figures quoted in this report have been liberally used, particularly in Chapter-2, pertaining to 'Prevalence and Incidence of Handicap : The Indian Scene'. Similarly, all the four National Institutes for the different categories of the Handicapped, *viz.*, the Visually Handicapped, the Hearing Handicapped, the Orthopaedically Handicapped, and the Mentally Handicapped, complied with the request for sending in requisite information about their respective institutions.

A number of my students showed enthusiasm and active interest in my present work and rendered help and assistance in innumerable ways, such as, by checking some references from various libraries, and sorting of reference cards. Shri Mahesh Prasad, a student of Psychology, who otherwise teaches Physics in Modern School, New Delhi, devotedly spent a good part of his summer holiday, in meticulously going through the final manuscript. It gives me immense pleasure in acknowledging his invaluable assistance. Both my sons, Dolon and Rangan also got involved in doing their part of titbits in their mother's work.

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Lastly, my husband, Professor A. K. Sen, in addition to his constant inspiration provided at personal level, he being in the same discipline, also rendered all possible professional help and suggestions whenever needed. A mere 'Thank you' seems to be rather inadequate to express my feeling.

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Preface

A recognisable size of mankind suffers from various kinds of disabilities, either because of some congenital factors or because of natural catastrophes or even man made disorders. Whatever may be the cause, the trauma has a tremendous impact on the psyche of the victim imposing on him several constraints in his development as human being. Disability may restrict organic functioning of an individual; under certain circumstances it may put restrictions in the intellectual development as well. The repercussions may bring in some psychological problems in the individual. The constraints not only restrict the fuller development of an individual, but also may manifest themselves in various behavioural problems as well. Thus the disability becomes the wide open gate for converting a person into a handicapped in his social reality.

A civilized society shows its concern for the disabled and attempts to bring even the most affected being into its fold by adopting suitable strategies. The IYDP celebrated in 1981, brought in a world-wide concern for the handicapped. India, being the second most populous country in the world, also could not remain unaffected. Voluntary agencies, social welfare organisations, Governments both at national and State levels are now getting more and more involved with the prospects for integration of different types of the handicapped into the society.

Special schools, integrated education programme, orientation course for special education teachers, rehabilitation programmes, are some of the dircet consequences of this recent awareness. Unfortunately, however, any comprehensive book on different types of handicap is still not available in India. The students of various social science departments, in the university or colleges, social work departments, special education teachers still feel the void of a comprehensive book in the area of handicap in India. Information from various sources like seminars, conferences and scattered research findings from India and abroad, are also only sporadically available.

Present endeavour was made to fill in this gap in Indian context. The present work is a venture in the direction of analysing the predicaments of the handicapped in the society. It attempts to bring in together research works in different areas of disability, highlighting epidemiology, psychological aspects, educational and training possibilities and social rehabilitation, after analysing the concept of handicap in its various conditions and identification of adjustment problems in different areas.

The author has had the privilege of having research experience in the field of mental handicap over a long period of time. She also had the opportunity of carrying out some research work in other areas of handicap, *viz.*, blindness, deafness and orthopaedic impairment, along with her students from different academic levels. The author had also the opportunity of participating as a guest teacher in different training programmes for the special education teachers, undertaken on various occasions by different Organisations, such as NCERT, Department of Adult Education and Continuing Education, Delhi University. The present manuscript is thus a natural sequel of the accumulated knowledge and experience acquired through research, teaching and exchange of ideas in academic discussions by means of participation as a resource person at various workshops, seminars and conferences held by different Organisations, at national and international levels. The present work, thus had incorporated some of the author's own research findings in the field of handicap in different categories.

The Planning Commission, Government of India, in its First Five Year Plan classified physically handicapped as (*i*) Those lacking in one or more physical senses, *i.e.*, blindness or deafness, or in combination; (*ii*) those suffering from movement difficulties, *i.e.*, orthopaedic, malnutrities and cardiacs; (*iii*) lepers, epileptics, rachities and dumb persons.

In addition to leprosy afflicted persons, there are also other types of social handicaps, such as the old, the infirm, the insane, the emotionally handicapped, etc. However, it needs to be pointed out that the present book covers mainly the four major categories of the handicapped, *viz*., the Blind, the Deaf, the Orthopaedically Handicapped and the Mentally handicapped.

The book has been envisaged in four parts. After a general Introduction, Part-I deals with the concept, incidence and prevalence rate and different areas of adjustment of the handicapped, in general. Part-II deals with the major categories of the sensory and physical handicap, *viz*., the blind, the deaf and the orthopaedically handicapped in three different chapters, giving in detail under each category, magnitude of the problem, causes, types, prevention, cognitive characteristics, personality characteristics, research findings in India, scope of prevention, education, training and their rehabilitation, into the society. Part-III deals with the topic of mental handicap in relation to its various perspectives. Finally, Part-IV, discusses in retrospect, the scopes and prospects of the handicapped in the Indian society.

The book aims to be both a text book for social science students as well as a resource book for research scholars, special education teachers, workers in the university and other educational institutions, social welfare institutes, students of the B.Ed., M.Ed. classes as also for any course dealing directly or indirectly with the topic on disability or handicap.

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Introduction

It has been estimated that ten per cent of world's population, *i.e.*, about 500 million people are either physically or mentally handicapped all over the world. The developing and the underdeveloped countries have the lion's share of world's handicapped population, and 350 million handicapped are out of reach and out of help. The declaration of the year 1981 as the international year of the disabled persons (IYDP) was intended to reflect the gravity of the problem to the world over. It aimed to remind its inhabitants their duties and responsibilities towards their less fortunate fellow beings.

The main objectives aimed at during IYDP year were to promote and support effective measures for the prevention of childhood disabilities, encouragement for positive attitude towards disabled children and the fuller participation and integration of the disabled in society and development of adequate rehabilitation programmes.

It was suggested that the plan of action must include enriching all on-going health, nutrition, education and social welfare programmes for children, to prevent impairments, to detect disabilities early and to apply appropriate treatment and rehabilitation. The emphasis was on the total needs of the child and not on the impairment alone, so that the development of each child can be as normal as possible. Further emphasis was made much on strengthening the understanding and capacity of the family and the community to prevent disability and to help those children who are disabled.

Human societies thrive for mutual help and co-operation in their productive relationship. In a dynamic society every individual's endeavour and involvement needs to be ensured for useful social ends. As Helen Keller maintained, it is the fundamental right of everyone to realise himself, however imperfectly and contribute to the common good, however little. It is worthwhile to remember that a disabled person is handicapped under certain circumstances. However, in all other situations, barring the handicapping one, the disabled individual is, in fact, a total individual. His bodily and psychological needs, are in no way different from the so-called normal person. In fact, once in a while almost everybody feels handicapped in one situation or another. For instance, an exceptionally tall person may find the usual standing space available inside the bus upto the roof top, is too inadequate to accommodate his physical height, and so he may feel handicapped.

The attitude towards the handicapped in our country has often either been nonchalant or mixed with pity and compassion for those who suffer from severe disability including blindness, deafness, any physical limitation or mental retardation. The person's disability is invariably interpreted as his misfortune. However, it needs to be emphasized that a person suffering from any kind of disability is not necessarily devoid of his remaining abilities or potentialities. It has been found that the severity of any impairment is aggravated in proportion to the individual's isolation from the society. A physical handicap becomes a social one, more painful to the individual, more costly to the society. Denying the handicapped person to be productively involved in the society, would deepen his feeling of inadequacy, incapacity and helplessness, forcing him ultimately to live a parasitic life. He needs to be rehabilitated as a full-fledged member of the society, vocationally, recreationally, psychologically and socially. Meaningful involvement of the handicapped person is the most effective means of social and psychological adjustment. There are undoubtedly problems which the handicapped have to face within the family ; the time involvement and efforts of its members, the complication and distortions in the development of other siblings—all these may ultimately lead to strain and resentment. However, none of these problems can be solved by rejecting the handicapped person. On the contrary, the associated problems can be considerably minimised by accepting the handicapped with love and concern. His active participation in socially meaningful activities will lessen the trauma of being handicapped ; it would imprint an indelible mark in his attempt to overcome the impact of handicap ; and it would help him in his all round development and social maturity. For the handicapped person, socially meaningful work has a stimulating and restorative effect, it brings to him an invigorating, joyful experience. It stimulates and restores self-confidence and makes possible the growth and development of inner resources, thus helping in enabling the person to gain recognition and acceptance in the society. For many disabled persons irrespective of age and sex, acquired or inherited disability, communication problems are at the core of their disablement and central to their personal struggle to learn to overcome their disabilities. They are often left isolated, helpless, dependent and they are deprived of expressing their individuality.

Handicap is sometimes used as a synonym to disability. It means disadvantage actually caused by the disability of disabled persons ; those who have visual impairment, auditory impairment or who have certain motor disabilities, have experienced different types of difficulties in communication and transaction in the society. In this respect it is, therefore, necessary to ensure that as far as practicable, the handicapped persons should be helped with suitable aids to go to ordinary schools meant for normal children, live within their families and become integrated into their respective environments. Parental involvement is of vital importance for this purpose.

National Sample Survey Organisation (NSSO) of India, in its 36th round in 1981 provided statistics for the disabled; the estimated numbers of different categories of the handicapped per 1,00,000 population are reported to be the following:

	Rural	*Urban*
Visual Disability	553	356
Hearing Disability	553	390
Speech Disability	304	279
Locomotor Disability	828	670

The NSSO survey did not include prevalence of mental retardation. However, according to 1974 statistics available, three to four million were estimated to be mentally retarded. On sex basis, 444 males and 670 females were reported to be blind in rural areas as against 294 males and 425 females in urban areas.

According to the Census report of India, 1981, among the disabled, the largest number was accounted for by the totally blind (4,78, 657 persons). While 4,24, 307 totally blind persons were enumerated in rural areas, only 54,350 persons were reported to be blind in urban areas. It has been reported that these data were collected at the time of house listing operation and were not comparable with the demographic data collected during 1980, and were analysed and presented in relation to the estimated population of the country as well as the states and union territories as on 1st July, 1980.

On all India basis the rates of hearing disability for males and females were found to be 595 and 510 respectively for the rural areas, the same being 386 and 395 respectively for males and females for urban areas. About 187 males per 1,00,000 males in the rural areas, and 120 males in the urban areas of the country as a whole, were reported to have hearing disability right from birth. The prevalence of disability from birth amongst females was estimated to be 146 and 96 in the rural and urban sectors respectively.

The NSSO report (1983) estimated 1,047 males and 597 females per 1,00,000 population who have shown at least one of the locomotor disabilities in rural India. For urban areas the estimated number of affected persons are 800 males and 544 females per 1,00,000 population. According the Census report of India (1981), the population of the totally crippled is 3,63,600 which accounts for the second largest number of the disabled in India. Among the totally crippled, the total number in rural areas is 3,04,640 as compared to 58,960 in urban areas. The proportion of the totally crippled per 1,000 population was estimated to be 0.555. It thus becomes evident that the problem of physical handicap in India is a major area for concern.

The Government of India has made reservation of three per cent position in all Class III and Class IV jobs for the handicapped. However, legislation providing reservations and other privileges to the handicapped alone are not enough ; they need to be properly implemented. About 90 per cent of the disabled persons live in isolated or rural places in India, where the rehabilitation programme cannot readily reach. Very few urban people or their families are knowledgeable enough to be benefited by any developmental programme for the handicapped.

It is apprehended that by the end of the current century there will be more than 600 million disabled in the world. One third of the world's population under 15 years of age would belong to developing and underdeveloped countries, and 150 million of those children are anticipated to be disabled. Worse still, India being the second most populous country in the world, its proportionate share of the handicapped persons, indeed, seems to be quite alarming.

Several factors are responsible for causing disability. Throughout ages, natural and man-made catastrophes have rendered many a persons incapable of functioning fully in the social sphere. Genetic factors, injury at pre-natal, natal or post-natal stages, poor nutritions of expectant and nursing mothers and children, infectious diseases, environmental pollution often find their ways as causal factors of different types of disabilities. Added with the list are the conditions of ignorance, poverty and accidental hazards. Needless to mention, poorer sections of the society are invariably more frequently affected by these factors. The reason seems to be that widespread ignorance prevails amongst them about the fundamental causes of disability, its prevention possibilities and scope for rehabilitation. It is a fact that in the less developed countries the causes are mainly malnutrition, unhygienic surroundings, endemic diseases, lack of basic knowledge of hygiene and lack of basic medical facilities. Since poverty embraces all these causes, it is therefore, not surprising that three-fourth of the world's disabled population can be found in the Third World Countries. In the affluent and industrialised societies, on the other hand, disabilities are largely due to the ageing process and occupational hazards and diseases. Thus socio-economic status of a particular society does make some reflection on the problem of disability.

The agony of the handicapped can only be understood fully by one who undergoes such experiences. Fortunately, however, the concern for the disabled has presently become a phenomenon in all civilized nation. The degree of civilization of a society can perhaps be measured in the context of its concern and provision it makes for those less fortunate individuals in the society. With the industrialization of the societies, the necessity for education and rehabilitation training of the handicapped in the community has increased manifold. A spectrum of changes has taken place in the society in its attitude towards the handicapped. Social attitude has shown marked changes from fear, avoidance and hatred to sympathy and tolerance towards the disabled, leading to an effort for their integration into the society.

The problem of the handicapped, in general, received an impetus for proper understanding from an international perspective in the International Year of the Disabled. In spite of many reservations and cynicisms still prevalent in many quarters, it is a fact that it did bring into focus the plight and problems of underprivileged people and action resulted as a follow-up to the recommendations of many workshops and seminar reports, such as Disability International.

The IYDP has stimulated the Indian States to plan and implement programmes for the integration of the disabled into the socio-economic fabric of the society by providing education, care, training and rehabilitation facilities. Integrated Education programme for the Disabled (IED) is presently the most conspicuous item for discussion in concerned circles ; and it is one of the most potential programmes found to reach the young handicapped in rural and urban areas. This programme is gradually gaining ground all over India leading to the preparation for the development of infrastructure at various levels.

Integration of the disabled person into the society as far as practicable, is one of the basic objectives of any civilised country. In order to maximise his social integration he has to be best equipped with his potentials which will lead to societal gains by avoiding individual loss and avoiding living of a parasitic life on his family. In order to achieve this objective, it is of primary importance to understand different kinds of disabilities, *vis-a-vis* different psycho-social aspects involved with them. Knowledge accrued from such an understanding will result in an appropriate curriculum planning and programmes and adoption of various techniques in the teaching-learning process of the disabled child. This will be implicitly associated with the aim of helping the child in acquisition of such skills such as, communicative, personal, social, and vocational, in order to enable him to be a relatively self-sufficient individual in a pluralistic society.

The types of problems faced by different categories of the disabled are varied in nature. It would, therefore, be appropriate to examine different psycho-social aspects including cognitive, personality, emotional, motivational and other socio-cultural factors separately, under some of the major categories of disability, *viz.*, the visually handicapped, the hearing handicapped, the physically handicapped and the mentally handicapped. Such an effort has been made in the present book as their integration into the social milieu always poses a serious challenge for the society.

PART—I

CHAPTER 1 : *THE CONCEPT OF THE HANDICAPPED*

CHAPTER 2 : *PREVALENCE AND INCIDENCE OF HANDICAP : INDIAN SCENE*

CHAPTER 3 : *AREAS OF ADJUSTMENT OF THE HANDICAPPED*

CHAPTER 1

The Concept of the Handicapped

The terms the handicapped and the disabled are generally used synonymously. Colloquially speaking, "disability" means something that incapacitates or disqualifies. However, disability literally refers to some kind of restriction or lack of ability to perform an activity in the manner or within the approved range considered normal for a person in the human society. From the medical and psychological perspectives, disability may be grouped into various types. A demarcation is usually made between physical disability and mental disability.

A more inclusive term 'Impairment', has been used by Sussman (1977). Impairment is defined as any deviation from the normal which results in defective structure, function, organisation or development of the whole, or any part of the individual's faculties. Disability refers to any limitation experienced by the impaired individual of similar age, sex and culture. It leads to a limitation of physical function whether locomotory, sensory or affecting any other specific organ. The effects of disability are seldom confined to particular pathological conditions. In a majority of the cases they extend beyond it embracing the psychological, educational and vocational aspects as well.

There are certain problems in defining disability. The question arises as who is disabled, and labelled by whom and under what circumstances ? The complexity of the concept of disability is undisputed, and various factors are associated with the problems of definition. A worker may suffer from chronic bronchitis or may have lost a limb, a young girl may have facial disfigurement or breast cancer, a man may be suffering from an incurable disease or a person may be labelled as 'epileptic', or 'hysteric'. A man may be a victim of leprosy with whom no one would probably like to mix up because of pre-existing social stigma. These are only a few examples that point to the complexity of the concept of disability.

Language disability of lower grades comprises interference with normal communication. This would involve those individuals who cannot hear what is said by others around, and as a result cannot respond. There would be others, who cannot state their thoughts intelligibly. These two problems are associated with receptive and expressive dimensions of language.

The group of mentally retarded or mentally handicapped lacks intellectual maturity to grasp the content of a lesson and/or they may lack the maturity to interact meaningfully with their age mates, because they are more akin to younger children in their developments in cognitive sphere. In contrast to them, there are persons classified as the crippled who may be equipped with appropriate mental faculties, still may feel constrained and restricted because of malfunctioning of their limbs and awkward movements of muscles. The children suffering from such disadvantages, cannot usually be taught under conventional arrangements. Emotional disturbances and multiple handicaps are some other forms of disability.

Disability conditions may be found among children or adults everywhere in the world. They may be severely mentally impaired, deficient or retarded or handicapped ; some children may be slow learners ; while others may have speech or language defects. Individuals may be partially or totally deaf or blind or partially sighted. Still some may be orthopaedically handicapped who cannot move about normally. Children may have specific types of learning disabilities or some children may have behavioural problems, maladjusted and even psychotic. Individuals may be affected with various combinations of such conditions, accidents, infectious diseases and other conditions.

Blaxter (1971) maintained that the causes of disability and its effects are again some of the important considerations in some cases, particularly when the purpose of definition has a reference for consideration of any grant pertaining to compensation for the nature of disablement. The causes of disability may be due to industrially induced diseases, or associated with services in the Army or some other various causes. The cause assessment criterion may be quite stringent, but not necessarily without any controversy. It is usually held by many who have to deal with disputed industrial injuries cases, that the industrially injured tend to exaggerate their disabilities.

However, notwithstanding any thing about the industrially caused injuries, the major causes of disability among children have been frequently identified as inadequate nutrition of expectant and nursing mothers and children including vitamin deficiencies, abnormal conditions before and after birth, like pre-natal damage, genetic factors and birth injury, infectious diseases, consanguinity, accidents, and various other factors including environmental pollutions, war, natural and man-made disasters, exposure to radiation and various other situations. Different types of disabilities along with possible causes may be conveniently grouped as follows:

Types of Disability	*Classification*	*Causes*
Impaired Vision	Total Blindness Partial Blindness	Infectious Diseases, Injuries, Poisoning, Tumours, Pre-natal influences, Miscellany.
Auditory—Impairment	Deafness Hard of hearing	Pre-natal influences, Injuries, Mental Retardation, Physical Handicap.
Speech Defects	Defects of articulation Defects of phonation Defects of fluency Language dysfunctions (delayed speech and aphasia).	Organic, Psychogenic, Functional.

Orthopaedic Handicap	Injured limbs Awakward movements of muscles	Post-Polio residual, Paralysis, Cerebral palsy, Tuberculosis.
Brain Injury	Cerebral Palsies Mental Retardation Sensory Defects	Circulatory disturbances, Disturbed metabolism, Growth & Nutrition, Brain trauma, Drug/Poison intoxication, Epilepsy, Infections, Miscellaneous causes.
Mental Retardation	Profound Severe Moderate Mild	Chromosomal Aberrations and other complexities, Infections during pregnancy, Medical complications, Environmental Deprivation, Familial Mental Retardation, Unknown causes.

Physical disability, according to the Department of social welfare, Government of India, includes impairments caused by congenital anomaly (*e.g.* clubfoot, absense of some parts of the body etc.), impairments caused by diseases (*e.g.* poliomyelitis, bone tuberculosis etc.), and impairment from other causes (*e.g.* cerebral palsy, amputation and fracture of bones etc.). Thus physical disability is not necessarily something that is physically imposed, recognised or caused, or only manifested physically or psychologically ; nor is it a malformation or malfunction. It may refer to the variation in physique with which usually a highly negative conotative value is associated.

The word handicap is used to describe the disadvantages imposed by an impairment or disability upon a specific person in his cultural pattern, or in his psychological, physical, vocational and community activities. The degree to which he is handicapped depends on his physical, psychological and mental capability and the social attitude imposed upon his specific impairment. Thus, handicap may be conceived as a social condition imposed on the disabled individual. This imposition has its roots in the negative value emanating from different sources such as imposed by the society, imposed by the person himself and imposed by a value that has important reprecussions on the personality of the handicapped individual.

It seems that the terms disability and impairments still have objective reference to the condition of the individual. But in day to day life situations the disabled face many social disadvantages, such as a feeling of inferiority, fear of social ridicule, inability to compete with the physically able-bodied people, lack of self-confidence and limited sphere of social participation. The disabled have to adjust themselves to their own disabilities as well as to the uncongenial social surroundings. It appears that they are called upon to bear a double burden, social handicap in addition to their very own specific handicap. It seems, therefore, that there is an automatic passage through the "disability" stage to a situation of handicap. The individual feels handicapped and is made to feel handicapped. Thus, more than the disability, it is the social handicap that worsens the life of the disabled. This social handicap has its roots in the stigma towards the disabled persons. Very often disability has been looked upon as a 'curse', a penalty one has to pay for his past sins in the Indian context. As a result, his self-concept may be affected and he is liable to develop a negative self image. The crux of the problem involved is, that disability is often determined by a social value judgement passed about a person.

Whatever may be the form of the disability, it always has some social consequences. Physique is supposed to be one of the very crucial factors in the formation of personality ; it is thus imperative that disability is almost invariably associated with a psychological problem. If normal variation in physique such as being strong or weak, tall or short, handsome or ugly, are important factors in peer group formation, evidently the pathological variations in the form of physical disability are quite potent factors in forming the negative body image of an individual. It has been reported in literature that physical attractiveness is a basic determinant not only in terms of achievement but also in terms of development of self-concept which is derived through social-interaction. Social interaction, on the other hand determines the adjustment patterns of an individual. Thus disability of any kind, depending on its degree, is likely to have important repercussions on the adjustment of the handicapped.

Blaxter (1971) attempted to determine a continuum between sickness and health. Most people are 'disabled' in some way or another. The position of an individual on this continuum experienced by him depends upon factors like identification, social perception, cultural concept of normality, social and family environment, community services and supportive systems available into the society alongwith individual's unique personality pattern and his own clinical picture. The identification of the location on such a continuum of individuals would have a significant bearing on the rehabilitation of the handicapped.

Illness and disability will continue to stay with human beings. However, a pertinent question arises on whether those millions of people with disabilities of one form or another are different kinds of human beings and whether such less fortunate individuals be differentially treated by the society. The crux of the problem thus starts with the meaning of disability which is often connected into handicapping condition by the community.

Existing literature is not exhaustive enough to give a comprehensive account of the problems of the handicapped in India, different aspects of their problems need a deep probe. For example, the disabled in the context of the family—this in itself comprises different aspects, such as parental attitude to normal and disabled *vis-a-vis* normal children, effect of inter-family relationship in the formation of personality, effect of neighbourhood attitude and community involvement amongst others.

Disability imposes an extra burden upon the child which consequently renders him more vulnerable to adjustment problems. The environment and normal social situations make the handicapped feel uncomfortable. Limited competence in the handicapped may give rise to feelings of inadequacy and rustration thereby eading to inappropriate social behavior.

Frustration, according to Maslow (1954) involves two concepts, deprivation and threat to the personality. Both of which are usually marked in the handicapped. In general, the causes of frustration lie in environmental forces that hinder motive fulfilment. This in such makes it difficult or impossible for a person to attain a goal, and personal inadequacies again make it impossible to reach the desired goals.

Environmental obstacles may bring in frustration in the way of satisfaction of motives. An obstacle may be something physical, such as the door key may be missing, or there may not be sufficient money to buy food. Frustrations can also be imposed by persons such as parents, teachers or others who may prevent an individual from achieving his goal the way he desired. In general, environmental obstacles are the most important sources of frustration for children. As children grow up and progress towards adulthood, desire for unattainable goals usually becomes increasingly important sources of frustration and anxiety. However, these are mainly acquired goals that cannot be achieved, because they are not within the reach of the person's abilities or because of personal inadequacies. A boy may be desirous to play on the school football term, or he may want to take the lead in a play ; but if he does not possess the requisite talent, he is liable to feel frustrated. Both adults and children are faced with environmental obstacles, and unattainable goals often lead to feelings of frustration.

Feelings of frustration or helplessness are not conducive to mental health. However, numerous sources of frustration are apparent particularly for growing children. A physically handicapped child encounters many problems; he may sense that people find him different, or he may realize that others find him unattractive. He may not have received training for independent, functioning that is most appropriate for normal children which enables them to perform things for themselves. As a consequence he may perceive himself as a 'damaged' or 'incomplete' person. The disabled child may have feelings of guilt, he may even consider his disabilities as a form of punishment for some offence. The accounts of successes and failures may draw blank for him in the sense that little has been attempted and there is little to record. In some cases it may consist of a series of failures which may make him biased against himself and may predispose him not to try even. Thus, it becomes evident that the helplessness and frustration experienced by the disabled child may also lead to the development of a poor self-concept.

Self-concept is the person's total appraisal of his physical appearances, background and ancestral origin, abilities and resources, attitudes and feelings, all these aspects culminate as a directing force in behaviour manifestation. The sources of a child's self-concept involve the way other people perceive him, the way they treat him, how he perceives himself, and accumulated experiences of his own failure and success.

One area of the disabled child's self-evaluation that has relevance for professional workers is that of his body-image. It has been found that the figures produced by amputed children provides clues to their own disabilities in the form of drawing a deformed limb or complete by omitting a limb. In drawing non-disabled persons, cripped children tend to be realistic about the differences that exist between themselves and others.

Apart from having an adverse effect on the formation of self-concept, the disability often produces difficulties of circulation, awkward gaits, muscles that do not obey the will, a general fragility, and various forms of disorders in perception. However, it does not necessarily follow that such disabilities would make the handicapped child also a handicapped learner.

Disability by itself, though a determinant of so many associated factors in a person, is not determined by just an objective reference in a person. As already indicated it is determined by a social value judgement passed about a person ; it may 'make' or 'break' a person. It may lead to deterioration, or it may lead to creative expression in some form of defence mechanism, such as sublimation ; it may give rise to self pity or fame. Whatever may be the causes of disability, and whatever may be its effects, it has a tremendous impact on the development of personality of the individual and his corresponding adjustment into the society. Thus, handicap is mainly a 'social condition' imposed on the disabled individual. The role of the society in labelling a person as handicapped, thus can never be undermined.

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CHAPTER 2

Prevalence and Incidence of Handicap: The Indian Scene

It is very difficult to estimate the incidence and prevalence of various types of disability among the Indian population because of some inherent problems. The detection of disability for that matter, is not easy in any part of the world, particularly because of the problem of accurate definitions. In the year of the IYDP in 1981, it was estimated that about 450 million people on earth suffer from some form of physical and mental impairment. Based on anticipated population growth and other factors, it was projected that an additional three million impaired need to be added to the world statistics of the handicapped during each year of the present decade. Specific statistics are not easily available in all countries. However, on the basis of some sample surveys conducted in India, only the approximate number of the disabled has been estimated from time to time.

On the basis of a Bombay Sample Survey made in December, 1959, it was estimated that there was a total of 88,23,000 disabled persons (about 23 percent) in India in 1956. Based on a Delhi Sample Survey, an estimated total of 1,34,40,000 (35 percent) was obtained for the same year (Taylor and Taylor, 1970).

The National Sample Survey Organisation (NSSO) conducted its 16th round in 1961 which included the first enquiry on disability. A person was considered to be disabled if he could be categorised in any of the categories of (*i*) blind, (*ii*) deaf, (*iii*) dumb, (*iv*) lame, or (*v*) crippled. The *blind* group included those persons who could not see for all practical purposes in both eyes. Similarly the *deaf* included persons who could not hear in both ears and the *dumb* included those who could not talk. A person who had deformity in either of the legs (with the exception of leprosy) was considered as *lame*. But if a person had deformity in any part of the body (not due to leprosy) excepting legs and was disabled thereby, was considered to be *crippled*. A complete enumeration was done at the village or block level for listing of disabled persons which was carried out at the time of listing of households in the sample villages and blocks.

The second enquiry on disability was made in the 28th round (October 1973-June1974) of the N.S.S.O. In this enquiry, 14 households on the average were surveyed for enumeration of disabled persons. In the sample households, enumerations were made for blind, deaf and dumb persons, persons having any speech defect (even if they could talk), lame persons, persons with loss of toe, foot, leg, fingers, arm and hand, persons having deformity either in hand or leg, and also persons suffering from paralysis of any kind.

The National Sample Survey Organisation (NSSO) estimated the number of handicapped persons per one lakh population in 1973-74, and published in its journal named, 'Sarvekshana'. However, there are still no reliable estimates of the nature and magnitude of different types of disabilities. It is generally believed that in India presently about 50 million persons are suffering with one kind of disability or other. They include the physically handicapped, the completely blind and partially visually handicapped, the deaf, the mute, and the mentally handicapped and mentally ill persons.

The Census Organisation of India (Census of India, 1981) in its report has furnished information on population of the physically handicapped persons in India. It has been reported that the total number of the disabled at the national level was 11,18,948 of which 9,69,401 persons were in rural areas and 1,49,547 persons in urban areas. Among the disabled, the largest number was accounted for by the totally blind (4,78,657 persons) followed by the totally crippled (3,63,600 persons) and the totally dumb (2,76,691 persons). The rural areas have had the larger share of the disabled persons belonging to each category. While 4,24,307 totally blind persons were enumerated in rural areas, the corresponding number was only 51,350 in urban areas. Among the totally crippled, while 3,04,640 persons belonged to rural areas, their number was only 58,960 in urban areas. Similarly, while 2,40,454 totally dumb persons were enumerated in rural areas, the number in urban areas was only 36,237.

In the surveys conducted by NSSO in the earlier rounds, persons with certain types of physical handicaps were enumerated. However, the report (NSSO 1983) mentioned that the data collected were not as dependable due to the problem of accurate definitions etc., which could not be worked out with the help of medical experts, as had been done in the 36th round. Because of this, it maintained that no comparable estimates of physical disability can be derived from the results of the earlier rounds to assess change, if any, over time. Similarly, even for disability of blindness and dumbness no projection could be made.

The NSSO in India conducted a survey in its 36th round during July-December, 1981, delimiting the coverage to only physical disabilities including, (*i*) Visual disability, (*ii*) Communication disability and (*iii*) Locomotor disability, from the almost entire area of the Indian Union. It was, however, mentioned that the survey, did not include Ladakh and Kargil districts of Jammu & Kashmir, rural areas of Nagaland and a few tehsils in the districts Sarguja and Bastar of Madhya Pradesh and districts Chandrapur and Melghat of Maharashtra, Sikkim and the Union Territories of Andaman & Nicobar Islands, and Lakshadweep.

All the States and the then five Union Territories, (*Arunachal Pradesh*, *Delhi*, *Goa*, *Daman and Diu*, *Mizoram* and *Pondicherry*) were included in the survey. The NSSO report (1983) presented in detail the number of sample villages, blocks allotted, number of sample villages or blocks surveyed, number of sample households surveyed, and number of persons and

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number of disabled persons under different categories enumerated.

Visual Disability

According to the NSSO report (1983), prevalence of this disability for the country as a whole, the prevalence rate per 1,00,000 population was estimated at 553 for the rural sector and at 356 for the urban sector. The prevalence rates for males and females were reported to be 444 and 670 respectively for all-India rural, and 294 and 425 respectively for all-India urban population. The survey revealed a large variation over the states in prevalence of visual disability among the population in either sector. The highest rate (769) was found to be in Andhra Pradesh while lowest (190) was in Assam for the rural areas. In urban areas the rate was highest in Tamil Nadu (637) and lowest in Jammu & Kashmir (141).

The prevalence of visual disability amongst the rural population was higher than that amongst the urban population in all the states except Kerala and Tamil Nadu. The prevalence of visual disability amongst rural females was higher than among rural males in all states except Assam, Himachal Pradesh and Jammu and Kashmir. In urban areas of all the States except Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab and Tamil Nadu, prevalence of visual disability amongst females was found to be higher than amongst males.

For the country as a whole, prevalence rate visual disability with no light perception per 1,00,000 persons was estimated to be 219 for the rural sector and 135 for the urban sector. The rates for males and females were estimated to be 165 and 276 respectively for all-India rural, and 124 and 147 respectively for all-India urban sector. The prevalence of disability amongst rural population was highest (316) in Orissa and lowest (70) in Kerala and Assam. In the urban areas, the rate was highest (372) in Tamil Nadu and lowest in Assam (47) and Delhi. In both the rural and the urban sectors, there was marked variation in the prevalence of visual disability with no light perception, across the States.

In both rural and urban areas of the country as a whole, nearly 20 persons per 1,00,000 persons were estimated to be visually disabled with no light perception *since birth*. For the rural population the prevalence rates of visual disability with no light perception since birth, varied among the States and Union Territories (where 1,000 or more sample households were surveyed) except Mizoram, over the range from 7 to 35. In all the States except Tamil Nadu, the corresponding prevalence rates for the urban population were between 4 and 31; for Tamil Nadu, the rate was found to be exceptionally high (104).

In both rural and urban areas of the country as a whole, nearly 24 *males* per 1,00,000 males were estimated to be visually disabled with no light perception since birth ; the corresponding estimate for *females* was found to be 19 for the rural and 17 for the urban sector. The prevalence of visual disability with no light perception since birth amongst rural males appeared to be substantially higher than amongst rural females in the States of Gujarat, Himachal Pradesh, Jammu & Kashmir and Tamil Nadu. In the urban areas of the States of Andhra Pradesh, Bihar, Kerala, Maharashtra, Orissa, Punjab, Tamil Nadu and West Bengal, the prevalence of visual disability with no light perception since birth, was much higher amongst males than amongst females. In urban Karnataka, however, the prevalence of the said disability amongst females was estimated to be much higher than amongst males.

The prevalence of visual disability with light perception was estimated to be 333 per 1,00,000 population and at 220 for all-India rural and urban respectively. The rates for males and females were found to be 278 and 391 respectively for all-India rural and 179 and 276 respectively for all-India urban population. In all the States except Assam, and Jammu & Kashmir, the rate for prevalence of disability amongst rural population was found to lie between 184 and 522. The rate of prevalence of disability amongst urban population was between 120 and 380 in all the States except Jammu & Kashmir.

In both rural and urban areas of the different States except Jammu & Kashmir (for the urban sector) the prevalence rate of visual disability with light perception was found to be

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between 100 and 435 amongst males. The corresponding rates for rural females in the different States except Jammu & Kashmir varied between 110 and 615, while those for urban females in the different states (except Jammu & Kashmir) were found to be between 135 and 410. At the all-India level, prevalence of visual disability among urban population was found to rise steadily with increasing age.

For the country as a whole, the incidence rate of visual disability was estimated to be 38 per 1,00,000 population; for the rural males it was 32 while that for rural females it was about 45, at the all-India level. The rate for all-India urban population was 23 for males and 38 for females. In the rural areas of the country, the incidence rate was highest (92) in Tamil Nadu and lowest (16) in Bihar. In the urban areas of the country, the rate was highest (66) in Tamil Nadu and lowest (11) in West Bengal. In rural Andhra Pradesh and rural Tamil Nadu, the incidence of visual disability amongst females was estimated to be more than 100 per 1,00,000 population. In rural West Bengal, incidence of visual disability amongst females was lower than amongst males ; while in rural Maharashtra incidence of visual disability amongst males and females was found to be at the same level. The incidence of visual disability amongst females was higher than amongst males for both rural and urban sectors of the States except West Bengal (rural) and Maharashtra.

The incidence rate of visual disability amongst population aged 40-59 was estimated to be about 40 for both rural and urban sectors. The rate for the age-group '*60 years and above*' was estimated to be 422 for the rural sector and 381 for the urban sector. The incidence of visual disability amongst females aged '*60 years and above*' was estimated at a slightly higher level than amongst males in the corresponding age group. In both rural and urban areas of the country, the incidence of visual disability among children aged between 0-4 years was higher than among children aged between 5-14 years in case of both males and females. The incidence rate amongst population aged 5 and above was found to rise monotonically with increasing age for both males and females in the rural and urban areas of the country.

At the all-India level, nearly 60 per cent of the visually disabled having no light perception, reported the onset of disability at ages 60 years and above. The proportion of cases with the onset of disability at age 45-59 years was slightly higher than 20 per cent for both rural and urban areas. Nearly two to five per cent cases of disability were reported to have commenced at each age group of 0-4 years, 5-14 years, 15-29 years and 30-44 years. It was reported that broadly, the age patterns of onset of disability for the different States came out to be similar to that for all-India level. This survey did not reveal any rural-urban differential rate in the age pattern of the onset of disability.

The age pattern of the onset of visual disability for the visually disabled with light perception was found to be almost similar to that for the visually disabled having no light perception. The pattern for the individual States also was observed to be broadly similar to that of all-India level. Similarly no rural-urban discrepancy was observed in age pattern of the onset of disability for the visually disabled having light perception.

Out of the cases for which causes were reported, *Cataract and corneal opacity was found to be the main cause of disability in both rural and urban areas of the country.* In most of the States cataract and corneal opacity were found to be the primary causes of the disability, while cataract, glaucoma and corneal opacity were the primary causes of the disability in a few other States. At the all-India level, the cause of disability not reported, was found to be 64 per cent in the rural areas and 58 per cent in the urban areas. In both rural and urban areas of the country, the visual disability with no light perception was mainly attributed to cataract followed by glaucoma, corneal opacity, injuries and eye haemorrhage. In both rural and urban areas of all the States, the primary cause of visual disability with light perception was reported to be due to cataract.

At the all-India level, the percentage of disabled persons who took no treatment, was estimated to be 54 and 33 for the rural and urban areas respectively. Nearly 17 per cent of the disabled persons in the rural areas and nearly 29 per cent in the urban areas of the country reported to have undergone surgical operation. Half of visually disabled persons in the rural areas reported to have taken no treatment either because treatment was expensive, or they had no knowledge of the place where treatment would be available. The similar explanation was given by 56 per cent of disabled persons with no light perception and by 44 per cent of disabled persons with light perception for not taking any treatment for the disability, in the urban areas.

Census report (1981) has given distribution of the totally blind. Lakshadweep has been recorded to have the maximum proportion of the totally blind in its population of the order of 1.875 per 1,000. The States of Rajasthan, Arunachal Pradesh, Orissa, and Madhya Pradesh have recorded the next highest proportions of the totally blind between 1.0 to 1.5 per 1,000 population.

The States and Union Territories of Himachal Pradesh, Dadra and Nagar Haveli, Uttar Pradesh, Meghalaya, Pondicherry, Mizoram, Tripura, Andhra Pradesh, Gujarat, Nagaland, Jammu & Kashmir, Tamil Nadu, Haryana, Maharashtra, Sikkim, Bihar, Punjab, and West Bengal have recorded 0.50 to 1.00 totally blind per 1,000 population which is more or less close to the number of the totally blind per 1,000 population recorded at national level. All the other states have a proportion of the totally blind less than the national figure.

Lakshadweep has an exceptionally high proportion of totally blind in urban population (3.00) ; ten States and Union Territories, including Lakshadweep, have proportions of totally blind per 1,000 urban population higher than the national level (0.355). These are Lakshadweep, Pondicherry, Dadra and Nagar Haveli, Rajasthan, Orissa, Mizoram, Tamil Nadu, Gujarat, Madhya Pradesh and Haryana. Out of the remaining States and Union Territories where this proportion is less than the national level, Andaman and Nicobar Islands are at the better side.

The proportion of the population of the States and Union Territories to the estimated population of the country and the proportion of the totally blind in States and Union Territories to the totally blind is highest (4.61) for Rajasthan, followed by Madhya Pradesh (3.31), Uttar Pradesh (2.91), and Orissa (1.79).

Hearing Disability

The NSSO (1983) reported the prevalence rate of hearing disability amongst the rural population of the country to be 553 per 1,00.000 population as against 390 for the urban population. The rates for males and females were 595 and 510 respectively for all-India rural, and the same for males and females were 386 and 395 respectively for all-India urban sector. The highest rate for the rural population was reported from Mizoram (nearly 900) and the same for urban population was from Tamil Nadu (nearly 728). The lowest rate was reported from Madhya Pradesh both for the rural population (314) and also for the urban population (205). The survey reported a large variation in the prevalence of hearing disability over the States in both rural and urban areas.

The number of persons disabled from birth amongst the rural population of the country was estimated to be 188 per 1,00,000 persons as against 108 for the urban population of the country. The prevalence rates of *hearing disability since birth* varied from 87 to 526 amongst the rural population of the States and the Union Territories, while the variation was between 70 and 225 amongst the urban population of the States and Union Territories.

Nearly 187 males per 1,00,000 males in the rural areas of the country and nearly 120 males in the urban areas were reported to have hearing disability from birth. The prevalence of disability from birth amongst females was estimated at 146 for the rural sector and at 96 for the urban sector. The rate for the disability since birth was highest in Mizoram for both males (536) and females (510) for the rural sector ; while the rate was lowest in Gujarat for males (93) and in Tripura for females (48). For the urban sector, the highest rate of the *disability since birth* was reported in Tamil Nadu for both males (268) and females (181) ; while the rate was lowest in Haryana for males (49) and in Madhya Pradesh for females (56).

Nearly 304 persons per 1,00,000 rural population of the country and nearly 279 persons per 1,00,000 urban population were estimated to have speech disability. The highest rate for the rural population reported was from Mizoram (640) and the same for the urban population from Haryana (625). The lowest prevalence rates for the rural and urban population were reported to be 174 and 161 respectively in Madhya Pradesh. There is a marked variation in prevalence of speech disability across States for both rural and urban areas.

The number of persons having speech disability from birth amongst the rural population of the country was estimated to be 234 per 1,00,000 population and same amongst urban population was found to be 186. Such rates for the rural population for most of the individual States varied between 150 and 435 ; the corresponding range for the urban population in different States was reported to be from 100 to 380.

The prevalence rates of hearing disability rise with increasing age after the age-group '15-39 years', in both the sectors and for both males and females. The rates are reported to be very high (over 2,000 per 1,00,000 population) for the '*60 years and above*' group. The rates for age groups of 5-14, 15-39, 40-59 and 60 years and above were found to be 343, 386, 647, 2,660 respectively for rural males ; similarly for rural females, the corresponding numbers reported were at 285, 250, 579 and 2,597. The rates for age groups of 5-14, 15-39, 40-59 and 60 years and above were estimated to be 266, 216, 386, 2,432 respectively for urban males, and while for urban females the same were 220, 196, 468 and 2,305 respectively. The prevalence of hearing disability amongst rural males and females was found to be higher than amongst urban males and females of the corresponding age group. The prevalence of speech disability amongst both males and females of the country in both the sectors were found to decline steadily over the age groups of 5-14 years, 15-39 years and 40-59 years, and then rising to some extent at ages '*60 years and above*'. The prevalence of speech disability amongst male children in the age group of 5-14 years, of both rural and urban sectors was reported to be of the same order. A similar trend was also found to hold for the female children as well.

For the country as a whole, the incidence rates of hearing disability was estimated to be 19 per 1,00,000 population for the rural sector, and 15 for the urban sector. The incidence rates for males and females were reported to be same in both rural and urban areas of the country. For the country as a whole, the incidence rate of speech disability was about four or five per 1,00,000 population for both rural and urban sectors. The incidence rate for males was about six or seven in both the sectors, while the corresponding rate for females was about two or three.

The incidence rates are found to be strikingly higher for the age-group '*60 years and above*', than for other age-groups in both the sectors and for both males and females. The rates for males in the age group of 5-10, 40-59 years and '*60 years and above*' were observed to be much higher than amongst females.

The age patterns of onset of disability for rural and urban areas of the country were found to be similar in nature. The age pattern of the onset of disability was also reported to be broadly similar for the individual States. Nearly 60 per cent of the disabilities were reported to have started at '*60 years and above*' and nearly 25 per cent of the disabilities were reported to have started at ages 40-59 years. The proportion of onset of disability at ages 50-54 years was estimated to be about eight per cent, while the same for each of the age groups of 0-4, 5-10, 15-29 was found to be below five per cent. Nearly 50 per cent of the disabilities were reported to have started at age of '*60 years and above*' and over 20 per cent of the disabilities at ages between 40-59 years. For the lower age-groups, the proportions reported were about five per cent or a little higher with the exception of the urban figure for the age group of 15-29 years.

In both rural and urban areas of the country, for nearly 50 per cent of hearing disabilities, the causes were either not known, or were other than those specified. Among the specified cases of the disability, *ear discharge* and *illness* were reported in the highest proportions of cases in both rural and urban areas of the country. Against this, not more than one per cent of the disabilities were attributed to German measles in both rural and urban areas of the country. At the All-India level, the cause of disability was either not known, or other than those specified, for 84 per cent of the cases of disability in the rural areas and for 75 per cent of the disabilities in the urban areas. Illness was reported to be the cause of speech disability for 11 per cent of the disabilities in the urban areas. In both rural and urban areas of the country, voice disorder in the form of speech disability comprised three to four per cent of the disabilities. Cleft palate constituted for about one to two per cent of the disabilities, in either sector.

At all-India level, nearly six out of 10 disabled persons in the rural areas, and nearly four out of 10 disabled persons in the urban areas, were reported to have taken no treatment. About three out of 10 disabled persons in the rural areas reported to have taken allopathic treatment. About half of the disabled persons in the urban areas reported to have taken allopathic treatment. No appreciable variation was noted in respect of degree of severity in percentage of persons reported to have no treatment and those reported to have allopathic treatment.

For the rural areas of the country, nearly one per cent of the disabled persons having different degrees of hearing disability reported to have undergone surgical operation. For the urban areas of the country, the proportion of disabled persons who underwent surgical operation was estimated to be five per cent for persons who cannot hear at all, and three per cent for persons having profound degree of disability, and about two per cent for persons having severe or moderate degree of disability. The distribution of 1,000 persons *having speech disability only* by type of treatment taken for the rural areas and for the urban areas was also reported in this survey. At the country level, nearly 65 per cent of the persons with speech disability in the rural areas, reported to have taken no treatment at all as against nearly 50 per cent in the urban sector. The percentage of cases reporting allopathic treatment other than surgical operation was reported to be 29 for rural India and 38 for urban India. The corresponding percentages for surgical operations were two and five for rural and urban sectors respectively.

The proportion of disabled persons who reported to have taken no treatment, because treatment was expensive was found to be 37, and at 31 percents for the rural and urban sectors respectively in the cases, persons having hearing disability ; while the corresponding figures in case of persons having *speech disability only*, was found to be 29 per cent for the rural sector and 18 per cent for the urban sector. Fourteen out of twenty five disabled persons in the rural areas and thirteen out of twenty five disabled persons in the urban areas reported to have not acquired the hearing aid because this was either expensive or not available. Two out of 25 disabled persons in the rural areas and one out of 10 disabled persons in the urban areas did not acquire any hearing aid as its use was not necessary for their economic independence.

The Census Report of India (1981) reported the distribution of the population of the totally dumb among the states and union territories and also the corresponding proportions of the general population, is widely varying with West Bengal leading (5.40) followed by Andhra Pradesh (2.98), Tamil Nadu (2.84), Orissa (0.99) Jammu & Kashmir (0.88) to Lakhshadweep (0.01).

It was also observed that Sikkim recorded the maximum number of the totally dumb per 1,000 population, of above six, followed by Arunachal Pradesh and Nagaland with 2.00 to 2.50 totally dumb per 1,000 population. Mizoram was found to be in the range of having 1.50 to 2.00 totally dumb per 1,000 population, wherein Lakshadweep was in the range of 1.00 to 1.50 totally dumb per 1,000 population. The States and Union Territories having 0.50 to 1.00 totally dumb per 1,000 population are Himachal Pradesh, Jammu & Kashmir, Dadra and Nagar Haveli, West Bengal, Meghalaya, Manipur, Tamil Nadu, Andhra Pradesh, Tripura and Orissa. All the other States and Union Territories reported less number of the totally dumb per 1,000 population than that was observed at National level.

Orthopaedic Disability

The number of persons having locomotor disability was estimated to be 828 per 1,00,000 persons for the rural areas of the country and at 679 for the urban areas. The rates for males and females were found to be 1,047 and 597 respectively, for the rural areas, and 800, and 544 for the urban areas. In the rural areas of the country, the highest rate (nearly 1,400) was estimated in Punjab, and the lowest rate (271) in Assam ; in the urban areas of the country, the rate was highest (973) in Haryana and lowest (296) in Assam. Discrepency in prevalence of locomotor disability over the States was reported for both rural and urban areas of the country.

The prevalence of locomotor disability amongst males was estimated to be 1,047 per 1,00,000 persons for all-India rural as against 800 for all-India urban sector. The all-India rate for females was estimated to be 597 for the rural areas as against 544 for the urban areas. The prevalence of locomotor disability among males was found to be much higher than among females in all the States and Union territories, for both rural and urban areas of the country. Marked inter-state variation in prevalence of locomotor disability was also noticed for both males and females.

For rural India as a whole, the prevalence rates of paralysis, deformity of limb, amputation and dysfunction of joints were found to be 195, 350, 65 and 169 respectively. The corresponding rates were 246, 444, 100 and 200 for males and 141, 250, 28 and 137 for females. The prevalence of paralysis amongst males was estimated to be in the range of 135-480 per 1,00,000 persons and the same amongst females was 90-240 for all the States except Assam. The number of persons having deformity of limb was estimated to be in the range of 300-720 per 1,00,000 persons for males and the same is 160-440 per 1,00,000 persons for females, for all the states except Assam. The proportion of persons having dysfunction of joints was estimated to be in the range of 100-300 per 1,00,000 persons for both males and females for most of the states. In all the states except Haryana, the proportion of amputees amongst females was estimated at less than 100 per 1,00,000 persons. The proportion of amputees amongst males was found to be below 100 per 1,00,000 persons in all the States except Haryana, Punjab, Jammu & Kashmir and Uttar Pradesh.

At the all-India level, prevalence rates of paralysis, deformity of limb, amputation and dysfunction of joints were estimated to be 1:3, 276, 53 and 126 respectively. The proportion of amputees amongst males was found to be highest in Punjab and Haryana. In Haryana, nearly 200 females per 1,00,000 were estimated to have undergone amputation, while in the other states, the prevalence of amputation amongst females was markedly lower. A large variation was observed in prevalence of paralysis, deformity of limb and dysfunction of joints among both males and females over the states.

For the country as a whole, the prevalence of the different types of locomotor disability amongst urban males and females was slightly lower than amongst their rural counterparts ; and the prevalence rates of the different types of disability (other than amputation) for rural and urban females were estimated to be at the same level. In most of the states, prevalence of paralysis, deformity of limb and dysfunction of joints amongst urban males was lower than amongst their rural counterparts. The prevalence of paralysis amongst rural females was higher than among urban females in seven states while the prevalence of paralysis among urban females was higher than amongst rural females in the remaining states. For all the states, prevalence of deformity of limb and dysfunction of joints amongst rural and urban females was estimated at a comparable level.

At the all-India level, the prevalence of locomotor disability amongst urban children (aged 0-4 years and 5-14 years) was observed to be higher than amongst rural children. While the prevalence rates for rural adults aged 15-39 years, 40-59 years and '*60 years and above*' were found to be higher than for their urban counterparts. In both rural and urban areas of the country, the prevalence of disability amongst children was reported to be higher for the 5-14 years age-group than for the 0-4 years group, the prevalence of disability appeared to decline with age after the age-group of 5-14 years but rises after 15-39 years, in both rural and urban areas.

At all-India level, the prevalence of locomotor disability amongst rural males appears to rise steadily with increasing age. The age pattern of prevalence of disability for rural males was found to be similar to the all-India age pattern in the States of Bihar, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Maharashtra, Uttar Pradesh and West Bengal. In the remaining States, the prevalence of disability amongst rural males falls after the age group 5-14, but rises progressively after 15-39 years. At the all-India level, the prevalence of disability amongst urban males was found to rise between the age groups 0-4 years and 5-14 years and then was found to decline between age-groups 5-14 years and 15-24 years, thereafter it seemed to rise steadily with increasing age. Similar age pattern amongst urban males was observed in all the states except Assam, Kerala and West Bengal. In the urban sector of Assam, Kerala and West Bengal, prevalence of disability appeared to rise steadily with age.

At the all-India level, the prevalence rate of disability amongst both rural and urban females was reported to increase between 0-4 years and 5-14 years and then decline to a lower level for the 15-39 years group ; thereafter the rate was found to rise steadily with increasing age. The age pattern of the prevalence of disability amongst urban females in the different states was reported by and large to be similar to the all-India age pattern. The age pattern for rural females in all the states except Orissa and Tripura was found to be similar to the all-India age pattern. In rural Orissa and rural Tripura, the prevalence of disability among females seemed to rise monotonically with increasing age.

The incidence rate was estimated to be 53 per 1,00,000 population for both rural and urban sectors of the country. At all-India level for rural sector, the rate was 64 for males and 42 for females ; while for urban, the rate found to be 61 for males and 47 for females. In the rural areas of the country, the rate was highest in Punjab (129) and lowest in Kerala (29) ; while in the urban areas of the country, the rate was highest in Orissa (106) and lowest in West Bengal (26). In all the States except Andhra Pradesh and Kerala, incidence of locomotor disability among rural males was higher than among rural females. In rural Kerala, incidence of locomotor disability among both males and females was estimated to be at the same level. The incidence of disability among urban males was higher than among urban females in all the states except Rajasthan. In urban Rajasthan, incidence of locomotor disability among the males and females was estimated to be at a comparable level.

The survey reported the incidence rates of paralysis, deformity of limb, amputation and dysfunction of joints of the limb at the all-India level for the rural and urban areas. The rates per 1,00,000 population for paralysis, deformity of limb, amputation and dysfunction of joints were estimated to be 17, 13, 4 and 17 respectively for the rural areas as against 18, 16, 3 and 15 respectively for the urban areas. In both rural and urban areas, incidence of paralysis and amputation among males was reported to be higher than among females. The incidence of deformity of limb and dysfunction of joints among males was found to be higher than among females in the rural areas at the country level ; while the incidence of deformity of limb and dysfunction of joints among both males and females in the urban areas was estimated at a comparable level.

Age-wise, the incidence rates per 1,00,000 population for age-groups 0-4, 5-14, 15-39, 40-59 and 60 years and above were found to be 97, 26, 19, 90 and 243 respectively for the rural areas as against 131, 22, 15, 61 and 301 respectively for the urban areas. The incidence of disability among the urban children (aged 0-4) was higher than among the rural children, the incidence of disability among the urban population aged between 5-39 years was found to be lower than among their rural counterparts ; while the rate for the urban population aged 40 years and above was reported to be higher than among their rural counterpart. In both rural and urban areas of the country, incidence rate for both males and females was found to decline progressively over age-groups 0-4, 5-14 and 15-39 with increasing age and then were reported to rises between age-groups 15-39 and 40-59 ; thereafter the rate was found to rise sharply between age-groups 40-59 and 60 years and above.

The distributions presented in the age pattern of the onset of disability for the rural and urban areas were found to be similar; nearly 60 per cent of the cases of disability due to paralysis were reported to have started at the age-group of '*60 years and above*' and nearly 30 per cent of the cases in the age-group of 45-59 years. The percentage of the onset of the disability in the age-group of *60 years and above* for the rural areas of the country, was much lower (34) than the corresponding proportion in the urban areas (47). The percentage of the onset of the disability for the age-group 45-59 years was found to be 25 and 30 for rural and urban areas respectively.

The cases of amputation of even one finger or a portion of a finger not resulting in the difficulty in moving object from one place to another and the cases of amputation of the toe (not resulting in the difficulty in moving oneself from one place to another) were also treated as cases of locomotor disability in the survey. The percentages of amputations at ages below 15, 15-25, 30-44, 45-59 and 60 and above were estimated to be about four, 10, 24, 27, 28 for the rural areas, and seven, 13, 33, 26 and 20 for the urban areas. The age pattern of the onset of disability for rural and urban areas of the country was found to be similar one where nearly 60 per cent of the cases of disabilities were reported to have commenced at ages 60 years and above and nearly 27 per cent of the cases were reported to have commenced at ages 45-59 years. The percentages of the cases of disabilities with the onset of disability at ages 0-4, 5-14, 15-29 and 30-44 lay between one per cent and five per cents.

The stroke was reported to be the cause of paralysis for over 10 per cent of disabilities in both rural and urban areas of the country. Nearly 15 per cent of disabilities in the rural areas and nearly 10 per cent in the urban areas were attributed to cerebral palsy. At the all-India level, polio was the cause of paralysis for 28 per cent of disabilities amongst the rural population and for 44 per cent of disabilities amongst the urban population. Nearly 19 per cent of the disabilities in the rural areas of the country and nearly 16 per cent of the disabilities in the urban areas were attributed to illness other than polio, stroke and leprosy. The percentage of other causes were found to be about 23 and 16 for the rural and urban areas respectively.

At the country level, polio was the cause of deformity of limb for nearly 30 per cent of disabilities amongst the rural population as against 40 per cent amongst the urban population. Nearly four per cent of the disabilities in the rural and urban areas of the country were attributed to cerebral palsy and stroke. (It was reported that, it was, however, possible that the said cases of disability were enumerated as cases of paralysis and were again enumerated as cases of disability due to deformity of limb because of the abnormal shape of the limbs.) About 30 per cent of disabilities in the rural areas and nearly 25 per cent of disabilities in the urban areas were attributed to causes other than the specified causes, and to illness, other than polio and leprosy. In both rural and urban areas, nearly 25 per cent of disabilities due to deformity of limb, were caused by burns and injury. In all the States, injury and polio were found to be the major causes of disability due to deformity of limb.

Nearly 25 per cent of the amputations in the rural areas and nearly 30 per cent of the amputations in the urban areas were reported to have been due to burns, injuries and medical and surgical interventions. The proportion of amputations due to leprosy was estimated to be 12 per cent for the rural areas and 8 per cent for the urban areas. About 60 per cent of amputations in both rural and urban areas of the country, however, were reported to have been done for other types of illness or other causes. 'Burns and injury' were found to be the cause of disability for nearly 42 per cent of cases of disabilities in both rural and urban areas of the country. Nearly 24 per cent of disabilities in the rural areas and nearly 20 per cent of disabilities in the urban areas were attributed to illness other than polio, leprosy and stroke.

At the all-India level, the proportion of disabled persons who took no treatment was estimated to be nearly 23 per cent for the rural sector and nearly 10 per cent for the urban sector. About 55 per cent of the disabled persons in both rural and urban areas of the country, reported to have taken allopathic treatment (medicines) and nearly 15 per cent in both the sectors reported to have used aid or appliances only. The proportions of disabled persons reporting other types of treatment, were found to be comparatively negligible.

The proportion of persons who were disable due to *deformity of limb* (not coupled with locomotor disability due to paralysis) and took no treatment, was estimated to be 37 and 21 per cent respectively for all-India rural and all-India urban sector. Nearly 40 per cent of disabled persons of the rural areas of the country and about 50 per cent of disabled persons of the urban areas of reported to have taken allopathic treatment (presumably medicines) represented. The percentage using aids/appliances was estimated at 8 and 11 for the rural and the urban areas respectively.

About 30 per cent of the disabled persons in the rural areas of the country and nearly 15 per cent in the urban areas reported to have taken no treatment at all. The percentage of disabled persons, who took allopathic treatment (presumably medicines) was about 45 for both rural and urban areas of the country. Nearly three per cent of disabled persons in both rural and urban areas reported to have taken physiotherapy or occupational therapy only. The percentage of disabled persons who used aids/appliances were found to be 11 and 15 for rural and urban areas respectively.

Nearly 50 per cent of the cases having disability due to paralysis in the rural areas, and three out of every ten persons having similar disability in the urban areas, reported to have taken no treatment, because treatment was expensive. It was reported that treatment could also not be taken for the said reason by 37 per cent of persons having deformity of limb, in the rural areas, as against 27 per cent in the urban areas ; similarly, by 48 per cent of persons having disability due to dysfunction of joints, in the rural areas, and 37 per cent in the urban areas.

The percentage of disabled persons, who could not take treatment because they had no knowledge of the place where treatment would be available, was 8, 12 and 6 respectively for paralysis, deformity due to limb and dysfunction of joints for the rural sector ; and 7, 9 and 3 respectively for paralysis, deformity of the limb and dysfunction of joints, for the urban sector. The percentage of disabled persons, who did not take treatment because treatment was not deemed to be necessary for economic or personal independence, was found to be 17, 22 and 14 for paralysis, deformity of the limb and dysfunction of joints of the limb respectively, for the rural sector ; the corresponding figures were reported to be 12, 22 and 24 for the urban sector.

The percentage of disabled persons who did not acquire the aid or appliance as advised by the medical experts, because the aid or appliance was not available or was expensive was found to be 45, 45, 50 and 47 respectively for paralysis, deformity of limb, amputation and dysfunction of joints of limb for the rural sector ; the corresponding figures for urban sector were

36, 44, 57 and 37.

The Census of India (1981) reported distribution of the Physically Handicapped among the States and Union Territories. It is seen that the States of Rajasthan, Orissa, Madhya Pradesh and Gujarat have a significantly higher of the disabled population than their corresponding proportion of the general population (their difference between the proportions of general urban population and disabled urban population ranging from 2.82 to 0.83).

In respect of the distribution of the disabled population in rural areas as well, these states together with Andhra Pradesh and West Bengal reported to have a higher proportion of handicapped persons than the remaining States and Union Territories. In regard to urban areas, the State of Tamil Nadu has the highest proportion of the disabled (4.02) while the other states having significantly higher proportions of the disabled population in urban areas are Gujarat (2.82), Rajasthan (1.65), West Bengal (0.83) and Orissa (0.82).

It is also reported that Sikkim has the largest proportion of the physically handicapped of more than eight persons per 1,000 population among all the states and union territories of India. The next highest proportion of the physically handicapped of about five per 1,000 is found only in Arunachal Pradesh followed by Lakshadweep, Nagaland and Mizoram with a proportion between three and four per 1,000. Only two Union Territories of Delhi and Chandigarh have recorded the number of the physically handicapped per 1,000 population of less than one. All other States and Union Territories have recorded more or less the same proportion of the handicapped of one to two per 1,000 persons.

The concentration of the totally disabled in urban areas comparatively less than that in rural areas and by and large the same States and Union Territories with a higher concentration of the totally disabled in rural areas are also having higher concentration of the totally disabled in urban areas except the two union territories of Delhi and Lakshadweep which are having lesser proportion of the disabled in rural areas than urban areas.

The Census of India (1981) reported distribution of the population of the totally dumb among the states and union territories and also the corresponding proportions of the general population, is widely varying with West Bengal leading (5.40) followed by Andhra Pradesh (2.98), Tamil Nadu (2.84), Orissa (0.99), Jammu & Kashmir (0.88) to Lakshadweep (0.01).

It was also observed that Sikkim had recorded the maximum number of the totally dumb per 1,000 population, of above six, followed by Arunachal Pradesh and Nagaland with 2.00 to 2.50 totally dumb per 1,000 population. Mizoram was found to be in the range of 1.50 to 2.00 totally dumb per 1,000 population, wherein Lakshadweep falls in the range of 1.00 to 1.50 totally dumb per 1,000 population. The States and Union Territories having 0.50 to 1.00 totally dumb per 1,000 population are Himachal Pradesh, Jammu & Kashmir, Dadra and Nagar Haveli, West Bengal, Meghalaya, Manipur, Tamil Nadu, Andhra Pradesh, Tripura and Orissa. All the other States and Union Territories have returned less number of the totally dumb per 1,000 population than that retained at national level.

Distribution of the totally crippled was estimated among the States and Union Territories. The distribution of the totally crippled are as follows. In 16 States and Union Territories the proportion of the totally crippled is higher than their corresponding proportion of the general population. The higher proportions were found for Gujarat (3.80), Madhya Pradesh (1.55), Orissa (1.50), West Bengal (1.18) and Tamil Nadu (0.94).

In regard to the rural areas, the States and Union Territories where the proportion of the totally crippled is higher than their corresponding proportion of the rural population are as follows : Gujarat (3.58), Madhya Pradesh (1 84), West Bengal (1.43), Orissa (1.39), Tamil Nadu (0.78).

The distribution figures of the totally handicapped in States and Union Territories are as following. Again Sikkim recorded maximum proportion of the totally crippled population (in the range of 1 to 1.25 totally crippled per 1,000 population). This was found to be followed by the States and Union Territories like Gujarat, Mizoram, Lakshadweep, Jammu & Kashmir, Nagaland, Orissa and Tripura, which have recorded 1.00 to

0.75 totally crippled per 1,000 population. The States and Union Territories which have recorded less than 0.50 totally crippled per 1,000 population are Pondicherry, Kerala, Maharashtra, Punjab, Haryana, Uttar Pradesh, Chandigarh and Delhi. All the other States and Union Territories have reported a figure of less than that of the national level of .555. Sixteen States and Union Territories have number of totally crippled per 1,000 in urban population higher than the country average, however, in 14 of them this proportion is less than the national level Where this proportion is more than 0.50 per 1,000 in urban population are Lakshadweep, Gujarat, Goa, Daman and Diu, Orissa, Arunachal Pradesh, Tamil Nadu, Tripura, Dadra and Nagar Haveli ; on the other hand Nagaland and Andaman and Nicobar Islands have the lowest proportions of totally crippled populations.

The main findings of the Survey NSSO of 1981 (reported in 1983) at the National level as summarised in the report showed that out of about 680 million population India, about 12 million, *i.e.*, about 1.8 per cent were estimated to be physically disabled. About 10 per cent of these physically disabled persons suffer from more than one type of physically disabilities, *viz.*, (*i*) visual disability, (*ii*) hearing disability, (*iii*) speech disability and (*iv*) locomotor disability. Considering these disabilities separately, persons having locomotor disabilities were found to be the highest in number and were estimated to be 5.43 million followed by visual disability (3.47 million). Persons having hearing disability, were estimated to be 3.02 million, while that for speech disability, the estimated number was reported to be 1.75 million.

The rural-urban break-up of these aggregates classified by sex, as estimated provisionally by applying the all-India rates thrown up by this survey to the 1981 census population are presented in the following Table (as reported by NSSO) :

TABLE 1 : **Estimated number (in thousands) of disabled persons by type of disability in the rural and urban areas.****

Type of Disability	*Rural*			*Urban*		
	Male	*Female*	*Persons*	*Male*	*Female*	*Persons*
(*1*)	(*2*)	(*3*)	(*4*)	(*5*)	(*6*)	(*7*)
1. Physical disability*	5496	4176	9672	1300	967	2267
2. Visual disability	1193	1715	2908	249	317	566
With no light perception	443	706	1149	105	110	215
With light perception	747	1001	1748	144	206	350
3. Hearing disability	1366	1111	2477	288	254	542
4. Speech disability	870	496	1366	255	133	388
5. Locomotor disability	2814	1528	4342	679	406	1085

* At least one of (*i*) visual disability, (*ii*) hearing disability, (*iii*) speech disability and (*iv*) locomotor disability.

The estimated number of persons who became disabled during 365 days preceding the date of survey as derived by applying the all-India incidence rates obtained from the NSSO survey to the 1981 Census Population are presented below in Table 2, separately for visual, hearing, speech and locomotor disabilities.

TABLE 2 : **Estimated (in thousands) number of persons who became disabled during 365 days preceding the date of survey by type of disability in the rural and urban areas.†**

Type of Disability	*Rural*			*Urban*		
	Male	*Female*	*Persons*	*Male*	*Female*	*Persons*
(*1*)	(*2*)	(*3*)	(*4*)	(*5*)	(*6*)	(*7*)
Visual disability	86	115	201	20	28	48
Hearing disability	46	39	85	10	11	21
Speech disability	114	4	118	5	2	7
Locomotor disability	172	107	279	52	35	87

** Extracted from p. 42 of NSSO Report of 1983.

† ,, ,, p. 43 ,, ,, ,, ,, ,, .

Summary

It needs to be mentioned that neither NSSO (1983) nor Census of India (1981) included the topic of the mentally handicapped while determining the prevalence and incidence of different types of disabilities.

The NSSO report mentioned that the prevalence of visual disability among females was higher than among males and the prevalence of visual disability with light perception was higher than that of visual disability with no light perception in both rural and urban areas. The incidence of visual disability with light perception among females was higher than among males in both rural and urban areas. The incidence of visual disability with no light perception among rural females were higher than among rural males while the incidence among urban females were lower than among urban males.

For those reporting the cause (not more than 50 per cent of the cases), cataract together with corneal opacity were found to be the most dominant causes for visual disability with no light perception, while cataract alone was returned as the major cause in the case of disability with light perception. Cataract was reported to be the most common cause for visual disability with light perception. However, only 29 per cent of such visually disabled persons have been reported to have undergone surgical operation in the urban areas, while the corresponding percentage in the rural areas was only 17 per cent. In the cases of visually disabled with no light perception, the percentages of cases undergoing surgical operation were slightly less, nearly 23 per cent in the urban areas and 15 per cent in the rural areas.

The survey also revealed that adverse economic condition rather than lack of knowledge about the facilities for treatment was the main reason for not taking any treatment. In fact, in the case of disabled with no light perception, the proportion of disabled persons who took no treatment because of the expensive nature of such treatments worked out at 46 per cent in the rural areas while it was surprisingly, still larger, in the urban areas 54 per cent. On the other hand, the proportion was very low in respect of the visually disabled who were reported to have taken no treatment due to lack of knowledge about the place where the treatment would be available, for either type of visual disability. Moreover nearly 30 per cent of the visually disabled persons with light perception in the rural areas as well as in the urban areas did not take any treatment as they considered it not necessary either for economic independence or for personal independence. The corresponding proportion in case of persons with no light perception was 25 per cent in the rural areas and 17 per cent in the urban areas.

The prevalence of hearing disability among males was higher than that among females in rural areas, while the reverse trend was reported for the urban areas. The prevalence of speech disability among males was higher than among females in both rural and urban areas. The incidence rate of hearing disability for males was found to be slightly higher than that for females in the rural areas, while there was no such sex differential in the urban areas. The predominance of incidence of disability among males over females in respect of the speech disability was, however, observed in both rural and urban areas.

The age pattern of the onset of disability namely, the increasing tendency of acquiring these disabilities as one progressed with age, was found to be broadly similar for hearing and speech disabilities. About 50 per cent of the cases who reported the cause, most of them attributed the disability to ear discharge and illness in both rural and urban areas. Nearly 60 per cent of disabled persons in the rural areas did not take any treatment in case of both hearing and speech disabilities. In the urban areas, the corresponding proportion was 50 per cent in the case of speech disability and 42 per cent in the case of hearing disability.

The proportion of cases for taking no treatment because the treatment was expensive come out at 37 per cent for the rural sector and 31 per cent for the urban sector in the case of persons having hearing disability as against 29 per cent for the rural sector and 18 per cent for the urban sector in the case of persons having speech disability. The proportion of disabled persons, who reported to have taken no treatment because the treatment was not deemed to be necessary for economic or personal independence was nearly 35 per cent in the case of persons having hearing disability and also in the case of persons having speech disability only for the rural areas ; while the corresponding proportion for the urban areas was 28 per cent in the case of persons having hearing disability and 47 per cent in the case of persons having speech disability only.

Nearly 56 per cent of disabled persons in the rural areas and nearly 52 per cent of disabled persons in the urban areas did not acquire the aid because this was either expensive or not available. The proportion of disabled who did not acquire the aid because the use of aid was not necessary for their economic independence was about 8 per cent in the rural areas and 10 per cent in the urban areas. The prevalence of the different types of locomotor disability among males was much higher than among females in the rural as well as in the urban areas. The incidence of disability among rural males were much higher than among rural females. In the urban areas, the incidence of disability due to paralysis and that of amputation among males were higher than among females while the rates for deformity of limb and dysfunction of joints came out to be same for both males and females.

About 55 per cent of disabilities due to paralysis in the rural areas and 66 per cent of the similar disabilities in the urban areas were attributed to cerebral palsy, polio and stroke. Injuries, burns and polio were the main causes of deformity of limb in both rural and urban areas while injuries, burns and leprosy were the major causes of amputation in both rural and urban areas. Slightly higher than 60 per cent of disabilities due to dysfunctions of joints were attributed to injuries, burns and illness other than polio, leprosy and stroke in both rural and urban areas. It may also be noted that slightly less than 30 per cent of cases of disabilities due to paralysis and deformity of limb in the rural areas and slightly more than 40 per cent of similar disabilities in the urban areas were attributed to polio.

The proportions of disabled persons who reported to have taken medicines were 53 per cent, 42 per cent and 42 per cent respectively for disabilities due to paralysis, deformity of limb and dysfunction of joints in the rural areas ; while the corresponding proportions were 58 per cent, 49 per cent and 47 per cent respectively for paralysis, deformity of limb and dysfunction of joints in the urban areas. The proportions of those who used aid or appliance were 14, 8 and 11 per cents respectively, for paralysis, deformity of limb and dysfunction of joints in the rural areas, as against 17 per cent, 13 per cent and 15 per cent respectively, for paralysis, deformity of limb and dysfunction of joints in the urban areas.

The proportions for taking no treatment because the treatment was expensive came out at 49 per cent, 37 per cent and 48 per cent for paralysis, deformity of limb and dysfunction of joints for the rural areas and at 31 per cent, 27 per cent and 37 per cent respectively for paralysis, deformity of limb and dysfunction of joints for the urban areas. Slightly higher than 10 per cent of disabled persons in the rural areas and nearly 10 per cent of disabled persons in the urban areas reported to have taken no treatment because the same was not deemed to be necessary for economic independence.

About 40 per cent of disabled persons in the rural areas who were advised the use of aid or appliances reported to have not acquired the aid or appliances because this was too expensive ; while the corresponding proportions for paralysis, deformity of limb, amputation and dysfunction of joints was 35 per cent, 41 per cent, 51 per cent and 35 per cent respectively in the urban areas. The proportion, who did not acquire the aid/appliance because this was not deemed to be necessary for economic independence, was nearly 10 per cent for three types of disabilities in the rural areas while the corresponding proportion was 16 per cent, 9 per cent and 9 per cent respectively for paralysis, deformity of limb and dysfunction of joints in the urban areas.

The NSS (1983) report mentioned that a wide divergence between the estimates of disabled persons obtained from the 36th round of NSS enquiry and the broadly comparable counts available from the 1981 census. The estimated number of visually disabled persons having no light perception per 1,00,000 population was estimated to be 219 for the rural areas as against 135 for the urban areas of the country as against the census proportions of 84, and 35, for the rural and urban areas respectively. Similarly, against the census proportions of 39 dumb persons for the rural areas and 21 dumb persons for the urban areas per 1,00,000 population, the estimated made by the NSS enquiry were found to be 142 and 102 for the rural and urban areas respectively.

The incidence and prevalence of various types of disabilities among the Indian population cannot be easily estimated because of some inherent difficulties involved in collecting the necessary information. This, of course, does not apply to India alone. The detection of disability is very difficult if one wishes to follow a strict definition. In this context the observations made in December, 1972 issue of 'Rehabilitation International' are quite pertinent.

> "The information presently available on the quality and extent of disability throughout the world is scant. Statistics on the incidence of specific disability and their causes are often inaccurate and generally incomplete. The figures which are available vary greatly... Among the variables which create problems of data interpretation are ... definition of disability and the condition which it includes (chronic limitation of activity, severe or minimal impairments, *e.g* , all visual defects, all anaesthesia in cases of leprosy, all missing parts of the body including digits, limbs), statistics of possible causes of disability or the actual number of specific disorders...".

With the expansion of industry, system of transportations and modernisation in agricultural functions, increasing survival rates of premature infants due to better neonatal care, and increasing life expectancies due to great advancement in field medicine, the disabilities are likely to increase both in quantity and diversity rather than waning. Perhaps is no other sector of Indian life, the gap what modern science can do and what it is actually doing wider. So little of what is known is being applied. However, a definite change has been apparent in recent years.

There are around 30 institutions in India rendering rehabilitation services for the disabled. Most of them are located in urban areas but the bulk of India—is disability problem lies in the rural sector. The entire spectrum of the plight of the handicapped needs to be studied against the backdrop of cultural, religious, social and economic milieu prevalent in different parts of the country. In specific terms, this would mean the widespread poverty, illiteracy, malnutrition, unemployment, overpopulation and social mores embedded in such phenomena as superstition and fatalism. All these factors have a great hearing on society's attitude towards the handicapped and tremendous impact of their welfare and rehabilitation into the society.

A handicapped individual has a basic right to human decency and to a life of productivity and fulfilment whatever his handicap is, mild or severe, single or multiple, incurred at birth or later in life, whether he lives in an urban or rural environment or whether his family has income or is poor. Special kinds of treatment, education, training, welfare support and other rehabilitation services must be provided which are appropriate to the handicapped. Person's needs if he is to benefit from this basic right.

Moreover, despite the fact that handicapped can be helped to become useful and productive citizens of this country, the fact that many a times the disabled may have identified with his disability, thus, leading to frustration and conflict coupled with emotionally and disruption in behaviour cannot be denied. So it must be remembered that the disabled workers not only need vocational training and guidance but also a sympathetic attitude and congenial social atmosphere. As Cruickshank (1952) says, often it so happens that they are placed in a position where they are impelled to strive for relatively inaccessible or unattainable goals. And living on the barrier between overlapping roles, becomes as good as committing a psychological form of suicide. So care must be taken to ensure that the disabled are placed in jobs which they can perform with ease and to develop a spirit in them which makes them independent and realistic.

Disabled workers should be encouraged to fully utilize the residual abilities which they possess and thereby become useful citizens of the country.

CHAPTER 3

Areas of Adjustment of the Handicapped

The basic adjustment problems of the handicapped are not necessarily radically different from the non-handicapped of comparable chronological and mental age. The disability does not presuppose introduction of psychologically significant variables. However, the disability imposes an extra burden upon the person which consequently renders him more vulnerable to adjustment problems. In the context of the physically handicapped, Cruickshank (1948) observed that, "It is seen that the physically handicapped child in his social relationships is, as are all children, attempting to insure not his physical organic self, but his phenomenal self, the concept of himself of which he is cognizent. Two types of problems are to be observed in the handicapped child from this point of view. (1) adjustment problems which might occur in the normal developmental progress of self and for the maintenances of self-concept already developed and (2) adjustment problems which are solely emerging from the fact that a physical handicap is inserted between the goal and the self-desire to achieve such a goal".

A handicapped child encounters many problems ; for example, he may sense that people find him different, he may realize that others find him unattractive. As a consequence, he may perceive himself as 'damaged' or 'incomplete' person. He may have feelings of guilt, even considering his disabilities as a form of punishment for some offence or wrong deed. The handicapped conceives of his disability as being restrictive in nature, as the environment and normal social situations make the handicapped feel uncomfortable. Limited competence in the handicapped gives rise to feelings of inadequacy and frustration, thereby he is liable to develop inappropriate social behaviour.

It has already been argued that handicap is mainly the 'social condition' imposed upon the disabled individual. The role of the society in the labelling a person as handicapped has serious repercussions. Therefore, the issue of the prospects for the physically handicapped in the society is really concerned with his total integration and rehabilitation into the society. Rehabilitation includes the process of readjustment of the individual in different spheres of life.

There are mainly two domains of adjustments that a handicapped person has virtually to make : (*i*) he has to adjust himself to his own specific disability and (*ii*) he has to adjust to the uncongenial social surroundings. The disabled may face many social disadvantages such as a feeling of inferiority, fear of social ridicule, lack of self-confidence, limited sphere of social participation and inability to compete with the so-called physically normal people. Thus, a disabled person has to bear a burden of both social handicap and his specific handicap. Though the individual feels handicapped, he is still a part of the family and the community. It is thus only imperative that he would like to participate fully, as being a part of the family and community, in the same way his counterpart who apparently does not have any disability. However, the very nature of disability would inflict in him a sense of deprivation, for example, sensory deprivation resulting from pathology of the sensory receptors, or lack of communication with other members in the society. A variety of adjustment problems would be apparent in different spheres, such as physical adjustment, emotional adjustment, family adjustment, social adjustment and experience deprivation.

Physical Adjustment

In many situations, a handicapped person, particularly the physically handicapped, has to face great deal of uncertainty than a normal person who does not have to worry about his movements or execution of plans. For the handicapped individual, however, the same situation causes anxiety, worry and tension. He has to assure himself, if he is physically handicapped, whether he would be able to move freely, cross a road, board a train or bus in order to reach his destination. If he is not in a position to be up and about, at once he gets a feeling of being cut out from the rest of the world. If he cannot move up and down, he cannot move out of his residence, or he cannot board a public vehicle, or for that matter he cannot attend to his job, even if he has managed to get one.

Some kind of physical disability produces difficulties of circulation of limbs, or uncontrollable muscle movements that do not obey the will, or a general fragility and various others problems, some of which apparently seem to be disorders of perception. It does not, however, necessarily follow that these disabilities make the handicapped child a handicapped learner. For example, the disability of poor circulation has little or no significance in the teaching-learning situation. Similarly, these children may not necessarily have problems from the standpoint of intellectual functioning.

Needless to mention that the disabled primarily needs help in physical adjustment in order to cope with his specific disability. This refers to the medical aid and other practical aid for daily living so that they may find new ways of performing the tasks independently, this comprises of the initial process of rehabilitation. A person who has lived with congenital handicaps from early childhood, may have learnt to accept the condition, although he may have some degree of awareness. On the other hand, an acquired handicap of a marked degree occurring after several years of normal physical activity, may cause serious frustrations. Such frustration may even lead to serious problems in psychological and social adjustment. In the development of personality, body image plays an important role. It determines individual's ideas of his own and ideas of others about him. When unexpected illness or accident occurs, the body image has to be changed or modified which is rather a painful process.

Emotional Adjustment

The psycho-social aspects of the physical handicap encompass broadly the attitude of the society towards the disabled and the adjustment of the handicapped to his specific defect as well as to the society. Speck (1975) studied social interactions of the handicapped and stated that there has been a change in the 'social isolation' resulting from negative attitudes of the other people.

The handicapped individuals suffer from emotional insecurity, in addition to his physical insecurity. Everyone is liable to feel insecure at one time or another, but the frequency of such a feeling is greatly enhanced in the case of the handicapped person. Human behaviour is directed invariably towards a certain goal, the attainment of which satisfies a certain basic emotional need. If progress toward a goal is thwarted, the process of personality development becomes jeopardized, unless a new course of action is resorted for overcoming or bypassing the barrier to reach the goal.

The disability condition tends to reduce the range of activities in which the persons can be engaged; it may also lower the level of his performance in some of the activities. Thus, unless his goals are appropriate to the abilities which he possesses or can readily develop such abilities, he is liable to experience frustrations more frequently. Physical discomfort, periodic institutionalization or hospitalization for treatment, the aversion, ridicule and scorn of the unscrupulous healthy peers, the nonchallant attitude of the society, all add to the evergrowing agonies of the handicapped child.

Family Adjustment

The child's first social group is his family. As a member of the family, he participates in simple day-to-day life situations and gradually becomes initiated and integrated into a broader environment. He learns to live first as a member of his own family, and later on as a member of the larger communities of neighbourhood, school etc. If he is well integrated into his family, he would experience more successes in his endeavours outside home as well. With the increasing awareness and feeling of belongingness to the family, he learns to orient himself to its routine and to other play activities. The initial affectionate bond between the mother and the child gradually leads to further stimulating interaction of the child with the rest of the family and his ever-widening environment. The home is by far the most potent institution around which life interests are started. With the weakening of home ties children often lose the sense of belonging, or being wanted and needed.

The home is the early socializing agent for shaping the personality of the child. Raising a child into a healthy and well adjusted young human being is an art. By and large, parents are very keen to provide their children appropriate upbringing in spite of many odds they have to face themselves from time to time. However, the presence of a handicapped child in the family gives rise to numerous additional problems. The parents of a handicapped child often visit every possible sources in the vague hope of finding a radical solution of the problem for cure. Disbelief in the existence of the suspected disability sometimes compels the parents to hunt for a cure or overcome the disability.

The impact of disability is closely related to the adequacy or inadequacy of the parental attitude that surrounds the child. Parents want to have a normal child; however, some times the expectant mother may have some apprehensive feeling that a deformed baby may be born to her. When this fear becomes a reality, a sense of guilt, feeling of rejection overcome the parents. In many instances rejection may be modified, and it may give way to over-protectiveness and over-possessiveness which eventually would turn out to be as damaging as the disability itself. In addition, some conflict may also likely to arise between meeting the needs of the handicapped child on the one hand, and those of other members of the family, on the other hand. If the handicap is of severe degree requiring continuous care, frustration and resentment are liable to become inevitable concomitants of coping with such heavy demands. The parents are to accept the reality that their child is different, but then they should try to show acceptance without being overwhelmingly emotionally upset about it.

The attitude of the members of the family towards the handicapped is a very important consideration. Acceptance of the handicapped child goes a long way towards the adjustments of his problems. A handicapped child may sense very easily the emotions of his parents. If the parents consider his disability a calamity which has made his life good for nothing, the handicapped child would also think likewise. If they feel bitter against an unjust fate, he would also start thinking the same. If the parents make his handicap the pivot of their existence, he is liable to use it with self-centeredness to extract sympathy from others. However, if they accept his limitations in an objective manner, he is likely to think and act in the same manner.

Every child yearns affection from his parents ; he needs to be assured that he is wanted in the family. Parents sometimes make provisions for gifts and toys for their handicapped child, even though they may not have accepted him emotionally. There are other instances where parents never allow their poor miserable handicapped child to grow up, as they never let him feel independent. They try to do everything for the child, and in the process burden themselves with trivialities and make their handicapped child loaded with more frustration.

Sometimes the handicapped child is poured with excess of love and care. Such a situation may lead to a potential hazard as ironically the other children in the family may feel emotionally deprived. The reverse is also not uncommon when the handicapped child is considered as a 'failure' ; other children in the family are pushed too hard and demand is put on them to excel as compensation. Invariably, the family of a handicapped child undergoes feelings of guilt, resentment, confusion, despair, contradictions, helplessness and even segregation.

The parents, particularly the mother is the pivotal force in urging the child from stage to stage in his growth and development. Considerable thought and attention, therefore, need to be bestowed upon by every parent on clarifying his own feelings towards the handicapped child, as he is invariably quick enough for perceiving and catching the parents' passing moods.

The discovery of the handicap in the child, for example, a serious hearing impairment, is liable to arouse feeling of distress in the family. Such feelings are justified to some extent for a while ; but in the course of time it needs to be tempered by the practical aspect of the problem. The family needs to be encouraged with the knowledge that through modern rehabilitation services, handicapped children can often be helped to attain economic independence and social acceptance. Without the resolution of these feelings on the part of the parents, it is difficult for the handicapped child to go through the most formative years of his life at home, without warping his personality. The parents must be realistic in their aspiration about the future of the child.

The parents are to realise the need for an early and accurate diagnosis of the child. Once the diagnosis is established, it is incumbent on the parent to begin the child's training at the earliest possible age with community help. The basic need of the handicapped child at this stage is to establish a bond of communication with his ever-expanding world and this process can be aided by affording him as much as possible a normal environment. The child's growth is determined by physical maturation as well as mental and emotional development.

William James, the great psychologist remarked, 'the world is a big blooming buzzing confusion'. If it is true for the normal child, it is more so for the handicapped one. He is combatting the sense of mistrust arising from his ignorance of the environment. The young child is seeking to establish trust through consistent parental image. This can be strengthened by consistent behaviour of the parents. Consistency in enforcing discipline, in regulating relations amongs all members of the family, laying down regular periods of learning through play, and consistently encouraging them to overcome the handicapping condition—all these would contribute greatly to reinforce the very sense of trust which the child is striving to achieve. The parents will need to overcome their feelings of frustration, if they have to witness slow progress of the handicapped child in certain spheres. The child must not be given slightest hint of parental disappointment, if any.

The handicapped child usually develops a sense of insecurity. Parental warmth is indispensible for every young child, but it assumes much greater importance for the handicapped child. Warmth does not simply mean cuddling or pampering ; it involves taking interest on the part of the parent in child's every day activities. This would pave the way for a sound foundation for the cognitive and affective growth of the young handicapped child.

A large number of handicapped children do experience a sense of rejection. Gross rejection may take the form of abandoning the child in an institution. Some subtle form of rejection may even take the shape of over-protection which is liable to stunt the child's emotional and intellectual development. Many a times all children are not treated alike in the home. This makes the handicapped child more sensitive to discrimination. It is desirable, therefore, that parents ensure that all the children in the home are treated alike in all respects, including reward and punishment.

While asking for fair treatment, the handicapped child should not be allowed to claim the lion's share of the attention of the members of the family. The presense of the handicapped child should not presuppose neglect of other children. Attention-seeking behaviour on the part of the handicapped child need to be sensibly dealt with, and he should be made to understand that he is a part of the family in which all members are equally entitled to attention, affection and physical comfort. The sense of sharing is the foundation for fair play ; and this can be started at home. The concept of acceptance would mean the fostering of the sense of sharing among all members of the family, including the handicapped child.

Experiencing success in a certain field or fields has a tremendous impact in the growth and development of the handicapped child. A small success would inspire him to have a bigger success; and nothing succeeds like success. Success generates and sustains motivation for achievement. The handicapped children are prone to experience more failures than do children who apparently have no handicap. A child's daily experiences accumulate to build up his personality, and in this respect experience of successes determines the nature of the mosaic pattern of personality.

Success is experienced best through participation in common place activities in the home and in the neighbourhood. Play is a fruitful avenue of giving the children a sense of achievement. In this context parents are to pay special attention to seeking every opportunity to help the young handicapped child to participate in such activities at home, as are compatible with his developing physique and mind. The siblings and the neighbourhood children need to be encouraged to take the initiative to be friendly with the handicapped child so that the latter can overcome his deep sense of inferiority and can feel the joy that every child experiences in participating on equal terms with his peers.

The impact of close and intimate relationship between the child and his parents has always been emphasized in human societies. The child comes to look upon the parents as the sources of all his satisfactions, and as the persons who are to supply all the basic needs that he, as a child, experiences. At the same time the child may look upon the parents as the source of his handicap, which causes hate, and also as the source of the solution of his disability. These two opposite feelings may result in an ambivalent attitude in relation to the same situation. If the child is unable to rationalise the two opposing points of view confronting him, the result will be conflict and maladjustment. The home provides the rudiments of the natural matrix for the development in the child's personality. Raising children, particularly the handicapped ones, are in fact quite technical in nature ; and like many other technical activities, it needs training, experience, devotion and above all, a loving concern for those most affected.

Social Adjustment

The handicapped person is not destined to have a smooth going in his social life. The adjustment of the handicapped child depends greatly upon the attitudes of the society towards him. He may live and work in a sheltered community of a special school and protected family environment. However, there is always the threat of the real world outside with which he has to come to terms eventually. The community also needs to adjust and accept the presence of the handicapped in its fold, and make necessary allowances for him with objectivity, and not with sentimentality. The society has to accept these persons with handicap, as people with their own assets and shortcomings.

If the child is not able to participate in normal play activities because of his handicap, he would have little contact with reality through play activities. This situation may bring to the handicapped child an adult state of maturity rather too soon, without the basic reality testing and understanding. As a result of his disability, the individual may tend to lay claim to importance and distinction, he may consider himself different by reason of his disability. It may also happen that as a result of too much parental attention or as a result of condescending attitude on the part of society, the handicapped child begins to feel inferior and inadvertently attempts to overcompensate for his shortcomings.

Man has a tendency to actualize himself, to realise his potentialities. This levels to the directional trend which is evident in all organic and human life—the urge to expand, extend, develop and mature, the tendency to express and activate all the capacities of the organism so that such activation enhances the organism or the self. This tendency may remain deeply buried under psychological defences ; it may remain hidden behind elaborate facades which deny its existence. Rogers (1954) contended that this tendency exists in every individual and awaits only for the appropriate conditions to be released and expressed. It is this tendency which acts as the primary motivation for creativity, as the organism forms new relationships to the environment in its endeavor to fully realise itself.

Thus even to the handicapped, each new situation may provide new innovational sources of creativity. A physically disabled person may be as creative than his normal counterpart, or even more sometimes. Disability does not necessarily hamper his creative ability. The close relationship between the defect and body structure increases the ego libido. Feelings of rejection by parents, peers and society may enhance even the importance of this relationship. A need may be felt to protect the defect the body ; and in fact, the ego in such cases may become more apparent itself as hypochondriacal solutions may be used as compensatory mechanisms.

Experience Deprivation

The handicapping condition may restrict sensory input both in number and variety of stimuli during the formative years leaving an imprint upon human development. The role of stimulating environment on the development of intellectual and social competence has been the object of research since the day of Itard (1801). Prolonged stimulus deprivation is a relevant variable for concern in the development of the handicapped child. The impact of lack of environmental stimulation is even much more pronounced in case of those unfortunate children who are already handicapped with their limited intellectual capacities, since stimulus deprivation leads to a relatively slow cognitive development. The most crucial impact from stimulus deprivation is perhaps experienced in the field of language development. Kagan's (1973) extensive work on role of environment for proper growth of intellectual competencies and language development also pointed to the same direction. Restoration of stimulus input is required to prevent disorder in personality development.

Richmond (1962) holds that sensory deprivation is of serious concern to such children even more than lack of mothering, especially during critical learning periods. If learning fails to take place during these critical periods, the effects of the 'bypass' may not be fully compensated for in subsequent learning experiences. Sen, A. (1976) has also discussed elsewhere the impact of stimulus deprivation during developing years. Gibbs (1959), in discussing Piaget's work on developmental patterns of children with cerebral palsy and other handicaps, suggests that some of spastic child's educational difficulties may be due as much to, sensory deprivation imposed by brain damage, as to the brain damage itself. The helplessness and frustration experienced by the handicapped child may also lead to the development of a poor self-concept in him.

It is possible that the child's pre-school experience may have made him unusually dependent ; but attempts should be made to try to develop independence in him by simple successful experiences in self-help. This would imply that the parents and teachers would step in when failure occurs, but such interventions are to be avoided whenever possible. While helping the child in solving a problem, they should also help him in becoming progressively self-reliant. Development of a good self-concept in the handicapped child is desirable. This should not mean promoting false feelings of adequacy ; rather it should be a realistic acceptance of limitations and a feeling of self-respect. He may be given to realize that the society wants to give him a chance to use his limited abilities in the best possible way. Self-image is positively related with achievement and communication skills. Experiences of progressively increasing difficulty may be planned appropriertly for the handicapped child so that he can perform them relatively successfully.

One area of the handicapped child's self-evaluation has relevance for consideration is that of body-image. It has been reported in research studies that the figures produced by amputee children provide clues to their own disabilities in drawing a deformed limb or even omitting a limb entirely. In drawing able bodied persons, handicapped children showed to be realistic about the differences that exist between themselves and their normal peers.

Phelps (1948) maintained that approximately 30 per cent of the cerebral palsied group of individuals is mentally retarded as a result of brain damage ; the remaining 70 per cent is normal "in the sense that these individuals show the normal spread of the population seen at large". In performance comparisons of spastic and athetoid children, Katz (1956) noted no differentiation on Stanford-Binet scores in terms of either mental age or I.Q. In an investigation on reading skills, Jones (1966) found that athetoids tend to suffer more severely from disordered eye movements ; but the frequency of such defects was found to be greater among the spastics. Consequently, measures of intellectual ability that rely upon some degree of reading speed, may be influenced by the visual factors.

Concluding Remarks

The problem of adjustment of the handicapped in the society is universally recognised. The discussions made earlier suggest that it is not so much a problem of the handicapped, disabled, or of the physical disability, as it is of the attitude of the society towards him and his impairment. Studies concerned with intelligence are available to make it clear that though the handicapped as a group do show some problems in certain areas of intelligence, all of them are by no means, less intelligent than their normal peers. The typical problems encountered by the disabled are in those areas where their specific disability imposes limitation on their cognitive development and performance, for example the blind usually lack visual imagery which is strong in seeing persons, and the deaf have problems with speech skills. Also, the basic adjustment problems of the handicapped are not unique or not radically different from that of the non-handicapped peers. By and large, it is the attitude towards the disability which may affect the personality of the affected persons. The environment and typical social situation make the handicapped feel somewhat uncomfortable.

Handicap, as such, is determinant of many traits and factors in a person. However, disability condition is determined by a social value judgment passed about a person. It may 'break' a person or 're-make' a person. It may lead to deterioration or creative expression, in a form of a defence mechanism, such as sublimation. Creative self-expression ; and self-help may enhance his self-concept, self-image and social adaptability. Whatever may be the causes of handicap and whatever may be its effects, it would have a tremendous impact on the course of personality development of the individual and his consequent adjustment into the society.

PART—II

This part deals with the three main types of physical handicaps, *viz.*, impaired vision, impaired hearing and Orthopaedic impairment, in three separate chapters. Each section deals in detail to envisage the magnitude of the problem, causes and nature of handicap, cognitive functioning, personality characteristics, Indian studies in the concerned area, cure and preventive aspects, prospects of education and training, and integration of the respective handicapped into the Society.

CHAPTER 4 : *THE VISUALLY HANDICAPPED*

CHAPTER 5 : *THE HEARING HANDICAPPED*

CHAPTER 6 : *THE ORTHOPAEDICALLY HANDICAPPED*

CHAPTER 4

The Visually Handicapped

It is mainly through the visual modality human beings receive accurate and gestalt impressions of the environment assisting in orienting them towards the environment. The twin processes of adaptation and accommodation have joined in helping in the vast development of the sense of vision through its extensive usage. Visual system is the most sophisticated of all sensory mechanisms ; accurate impressions of the environment received through the visual modality are unparallel in their depth of detail and in their ability to enable individuals in orienting themselves to the environment. Modern technology has overcome various obstacles in sensing the environment ; but the visual inputs have unique and inimitable characteristics.

Loss of vision induces a variety of adjustment problems and personality deterrants. Blindness in an individual exerts a profound effect on his psyche (Baker, 1959). The significant role of vision becomes evident from the fact that man both physically and psychologically, is the product of his continuous interaction with his environment; and vision plays a pivotal role in this interaction. It is, therefore, imperative that loss of vision would create serious adjustment problems, degree of which would perhaps depend on the psychological equilibrium of the disabled individual.

Blindness is a situational variable or a complex of situational variables. The blind person cannot acquire information by interpreting visual stimuli which is the richest source of information about the world in which the individual realises himself and his objectives. Onset of blindness brings in its wake a large number of problems which may affect the personality of the individual. Carroll (1961) has enumerated the losses brought about by blindness which include loss of physical integrity, loss of confidence in remaining senses, loss of visual background, loss of mobility, loss of techniques of daily living, loss of ease of written communication, loss of informal progress, loss of visual perception, loss of vocational goal, loss of job opportunity, loss of financial security, loss of social adequacy, problems of organisation of personality, amongst others. Blindness often leads to frenzied confusion and disorientation, it puts the affected individual out of gear. This sensory deprivation affects his mental health and he has to undergo a process called, "adjustment to blindness".

MAGNITUDE OF THE PROBLEM

According to the 1977 census report, out of the total world handicapped population 54 million were reported to be handicapped visually. Out of 54 million visually handicapped people, India's share is about 9 millions. It is said that after Egypt India has the largest blind population in the world ; and that every fifth blind person in the world is an Indian. According to 1974 statistics there were about 4.4 million blinds in India; this would mean that the figure has more than doubled up just in three years. This clearly indicates that visual handicap is the biggest problem of all handicaps.

About 30 per cent of the blind population in India lose their eyesight before the age of 21. Many children of school-going age suffer from visual impairment of different degrees, though reliable figures vary from region to region and State to State. It has also been said that about 12,000 to 15,000 children lose their vision every year in their pre-school age, and this is mainly because of Vitamin A deficiency.

According to Uday Shankar (1976), in India there may be about 0.15 per cent children with visual impairment, 0.14 per cent being partially and 0.01 per cent being totally blind. He has estimated that there may be about 15,000 totally blind children and over 1,35,000 partially blind children of the school going age in India. It has been estimated that out of 9 million blind persons, 4 millions are suffering from incurable blindness. Out of these 4 million incurably blind, 40 per cent are estimated to be children.

The 36th round of the country-wide survey of the NSSO (National Sample Survey Organisation) conducted in 1981 (NSS Report, 1983) estimated that the number (per 1,00,000) of persons with visual disability are 553 and 356 for rural and urban area respectively. On sex basis, 444 males and 670 females were reported to be blind in the rural areas as against 294 males and 425 females in urban areas, per 1,00,000 population. The survey covered about 6,000 villages and 4,000 urban areas scattered over the country. The Census Report of India (1981) enumerated 4,78,657 totally bind persons, the bulk of them (4,24,307) were reported to be mainly from rural areas ; though, the number of affected persons vary from region to region and State to State.

According to Goel (1985), India has 45 million visually handicapped persons, in addition to 9-10 million blind ; to these about one million cases are added every year. One estimate has shown that there are about 1.8 lakh blind children in India, and they belong to below 14 years of age-group. About 42,000 children go totally blind and 78,000 partially blind every year in India due to Vitamin A deficiency diseases, even before they reach five years of age (*see* Goel, 1985). It has been emphasized time and again that incidence of blindness is quite heavy in India and the most serious aspect of the problem is that a large number of children are being increasingly involved.

CAUSES OF VISUAL DISABILITY

Visual disability is caused by certain defects in any one of the parts of the human eye. There are four functional parts of the eye ; disturbances to any one of these parts or systems (either due to inborn or acquired defect), may lead to visual disability, either partial or total, depending on the nature of the defect.

The four systems or parts recognised for the eye are :

(*a*) protective part, (*b*) refractive part, (*c*) accommadation part, and (*d*) receptive part.

(*a*) *The protective part* consists of a socket in the skull in which the eye ball lies ; around this are eyebrows or eye lashes and tear glands, any defect in them may cause visual handicap. Trachoma is a serious disease of the eye-lids even causing total blindness sometimes. This disease can affect the cornea and the conjunctive of the eye ; any drooping of the lids because of the disease, may affect vision adversely.

(*b*) *The refractive part* of the visual system is designed to focus light on the retina in which the cornea, the crystalline lens, the aqueous humor and the vitreous humor are involved. Certain defects in the refractive system identified are myopia, hypermetropia, cataract, astigmatism and glaucoma. These eye problems affect the passing of the ray of light through the eye. Corrective glasses are used to rectify the problems of near-sightedness (myopia) or far-sightedness (hyperopia or hypermetropia) so that the light is focussed directly on the retina. In cataract, the lens becomes opaque, preventing the light rays from passing through the lens. This defect is usually operated upon and corrective glassess are given to the patient so that the light passes freely to focus on the retina. Astigmatism is the refractive errors in which the ray of light from one point is not focussed on one point, because of some irregularity in the cornea or lens of the eye. Glaucoma results in gradual loss of total vision, caused by increased pressure on the eye due to the accumulation of the aqueous fluid.

(*c*) The disability which may be categorized under the third system is the *directive type*, consisting in the structure of the six ciliary muscles of the eye controlling eye movements sideways or up and down. If these muscle functioning is defective, it may lead to squint or crossed eye. This defect results in the failure of the two eyes to direct simultaneous gaze due to faulty co-ordination of the muscles. Nystagmus is another type of defect in directive function wherein involuntary movement of the eye ball takes place affecting clear vision due to the muscle weakness or some other causes like brain injury.

(*d*) The receptive system where vision takes place depends upon the retina, the optic nerve, the brain cortex in the occipital lobe. There are different types of impairment in the receptive system. One such defect is called retrolental fibroplasia which is a condition of the retina caused by excessive oxygen supplied to the premature baby. Atrophy of retina is a hereditary degeneration and characterised by misplaced pigment. Similarly there could be optic atrophy or degeneration of the nerve fibres connecting the retina to the brain.

A host of conditions may degenerate any of these four functional systems of the eye which may be either congenital or environmental. Diseases like, meningities, epilepsy, small pox, hydrocephaly, brain tumor etc., may affect the area of the seeing part of the brain, impairing the visual process. Certain prenatal conditions, such as drug abuse, poisoning, infectious disease, syphilis, or tumor in the mother can lead to cataract or retinal degeneration of would-be-born child. Malnutrition such as lack of Vitamin A and other nutritional anomalies may cause different diseases of the eye. Night blindness is one of the first symptoms of Vitamin A deficiency, though its presence in young children is not always easy to ascertain. Vitamin A deficiency renders the eye insensitive to changes in light and affected persons cannot see properly at dim light or at night, even though their vision may be all right during day time. There may be *Xerophthalmia* in which the eye loses its lustre and appears rough and dry. There may be wrinkled grey spots in the white portion of the eye, known as 'bitol spots'. If the proper timely medicare is not provided, impairment of vision may result in many cases leading to Veratomalacia or permanent blindness.

Blindness can be prevented to some extent by taking dietory precautions. Children upto 12 years of age, the lactating mothers and adults in general need their daily quota of Vitamin A through diet in differential quantities.

Malnutrition is usually associated with poverty. However, malnutrition accounts for about only 2% of blindness occurrence, the major causes being cataract (about 55%) and other infectious diseases. There are about 90 lakh blind people in India ; a substantial number of people lives below the subsistence level. It is, therefore, not unusual that the poor section of people has its proportionate share of blindness leading to many more blind people among the poor. Poverty thus becomes an artifact of the situation rather than major cause for blindness, as such.

CONDITIONS OF BLINDNESS

When a person has visual acuity of 20/200 or even less he is considered to be legally blind. This would mean that the affected person's best eye can only see at 20 feet which can be seen at about 200 feet by a person with normal vision; a person is also called legally blind, if the corrected field of vision is less than an angle of 20° degree. However, if a person has no perception of a visual stimulus, he is considered to be completely blind.

If the visual acuity in the best eye is 20/70 or less, he is considered to have impaired vision, and visual ability is substantially reduced. Visual impairment may also include loss of peripheral or central vision. It may also take many other forms, such as, not being able to co-ordinate two eyes together on the object, blurred vision, or problem of vision under dim light or bright light.

Congenital Blindness

A congenitally blind person is one who has never experienced sight and is unable to visualize visual concepts. Such a person has to conceptualize ideas about objects and reality through any means other than vision.

Adventitious Blindness

An adventitiously blind person is one who has developed blindness later in life. His loss of sight, which may be gradual or abrupt, has taken place after experiencing the world first through the medium of vision.

Partially Sighted

Such a person does not lack total vision ; a person with less than 20/200 vision after correction, is however, blind in legal terms. The adaptation process of the partially visually handicapped is not the same as that of the completely blind. He needs to understand his own limitations. In fact in one comparative study on mobility of the blind by the American Foundation for the Blind (1965), it was found that partially sighted people with less than 10/200 vision were unable to travel independently as compared to the totally blind. The partially sighted person needs to be encouraged to take the benefit maximally from the tools at his disposal, in addition to the use of residual vision and other potentialities.

COGNITIVE CHARACTERISTICS OE THE BLIND

A great deal of speculation exists regarding the characteristics of the blind. Mental potentialities were presumed to be normal in this medical anomaly. Some believe that blindness is a handicap not only because it decreases mobility, but also it is accompanied by lack of initiative and spontaneity. Mikell (1953) observed that the blind pre-school child has its own unique pattern of growth. It takes longer for him to progress in walking, talking and also in motor coordination, as the typical eye-hand coordination in his case has been substituted by ear-hand coordination.

It is, however, rather difficult to draw simple conclusion about the characteristics of the blind. The visually impaired children show many problems such as behaviour problems as also problems of learning difficulty, because the concept formation of the congenitally blind is restricted as they do not have all the necessary sensations. Some children suffer from other sensory difficulties as well. The objects of learning are also sometimes too large or not easily accessible for them in order to enable them to touch, taste, smell or listen to them.

Concept formation depends upon the sensory stimulation through different senses ; and children having impaired vision would have difficulty in experiencing certain things through other senses. They would also have difficulty in perceiving objects in space or the third dimension or in developing abstarct concepts.

Lowenfeld (1950) found that there are some psychological aspects of blindness which includes cognitive functions, mobility, personality and social factor. He contended that blindness imposes limitations on the cognitive functioning which eventually brings in differences between the seeing and the blind child. The whole interaction set-up is changed for the blind, and he has to depend upon sense media other than vision in cognitive functions for certification of objects and making sensory contacts with the environment. However, Lowenfeld pointed out that though other senses such as hearing are probably practised to a greater extent than is ordinarily necessary for the seeing persons, the actual or innate ability in hearing is probably no greater for the blind. Mobility seems to be a great handicap for the blind ; though some blind adults are found to have made adjustments amazingly, even in busy thorough fares.

The blind differs from the sighted in the perceptual field in respect of the range and variety of experiences in the ability to get about, and also in the control of the environment and the self in relation to it. Such differences have significant implications for the intellectual development and educational achievement of the blind child.

One of the interesting characteristics of the blind is the lack of visual imagery which is usually strong in seeing persons. The visual image, even if developed in the earlier years before the occurrence of blindness, gradually fades away. According to Baker (1959) the blind tend to live in a world of temporal sequences rather than in the spatial sequence of the seeing persons. His associations are largely auditory and kinaesthetic, rather than visual.

The lack of vision affects behaviour not only because one's behaviour is an adjustment process, but also there are behavioural aspects which can only be maintained by visual feedback. Lack of visual feedback restricts the range of behavior. It was a common belief that the blind people are overcompensated by their other senses. Hayes (1941), however, contended otherwise that there is no psychological overcompensation, and they function as all do, except that they do it without sight. "In memory, as in sensation, compensation was not a gift but the reward of persistent effort, *i.e.*, attention practice, adaptation and increased use of remaining faculties" (Inam Shastri, 1977). Thus, sensory and motor limitations of the blind people have far reaching implications for perception and cognition. They influence the gathering of information, the maintenance of behavioural sequences, the acquisition of plans, the simulation of images produced by behavioural outcomes and assessment of risk.

The most extensive reports on the intelligence of the blind have been made by Hayes (1941), who is considered to be the pioneer in the field of intellectual and educational measurement of the blind. He used Hayes-Binet (1930) intelligence scale, which is an edition for the blind. From the revised Stanford-Binet—1937 revision, an interim edition was later on prepared (Hayes, 1950) Hayes found a mean IQ of 98.8 for a sample of over 2,000 blind children which is very near the normal average I.Q. point of 100. He also found more scattered intelligence scores than that observed among the sighted, with more at the superior as also more at slow and retarded end of the Scale. Davis (1978) in Perkins School for the Blind, Watertown, Mass, U.S.A., has also developed Perkins-Binet Test for the blind. In the Indian context, intelligence Test of performance type has been developed by Paknikar (1978) which is known as "Vithoba Paknikar Performance Test for the Blind". The National Institute for the visually handicapped at Dehradun has also brought out two tests for psychological assessments of the blind. One based on "Cornell medical index", is a clinical test with the objective of assessment of the psychological problems of the visually handicapped ; and the other test is a Personality questionnaire. Recently Blind Relief Association (BRA) of India has developed an intelligence test for the blind based on Standford-Binet Intelligence Test.

AGE OF ONSET OF BLINDNESS

Age at which loss of vision sets in, has a considerable impact on the mobility, educability and personality of the affected persons. The age at which sight is lost has not been found to be significantly related with intelligence test performance Levine and Blacknurn (1950) conducted testing of newly blinded adult, soldiers, and concluded that on the basis of Wechsler-Bellevue Scores that blindness does not affect the basic intellectual functions, if it occurs in adulthood. However, there is a consensus amongst those working in the field of blindness that the dynamics of personality development and social functioning of a congenitally blind person are substantially different from those who are adventitiously blind. When blindness is congenital, the external world is specified right from the beginning in terms of information contents of the non-visual stimulation ; and the central nervous system is programmed accordingly. Though information is reduced, there is redundency in the organisation of the energy to which human beings are sensitive.

When blindness sets in at a later stage, nervous system must be reprogrammed; behavioral sequences depending on visual feedback must be discontinued and new behavioral sequences are to be assembled and maintained. Information store should be modified and new plans need to be formulated. Often prolonged treatment hampers educational processes and development of personality, because the unlearning and relearning are not readily accepted for accomplishment due to the continuation of false hope and a notion of possibility of regaining sight. This inability to accept one's blind state causes deep frustration shattering one's self image.

The reorganisation of the system required is extensive; and until it is achieved, the system must function at a decreased level. In the book, "A Psychiatrist works with blindness", Cholden (1958) has discussed the reorganisational states, a person, who loses his sight at a later age, has to go through. Since the sightless person's social position, body image, capacities, interests and aims are deeply affected, much internal re-organisation is necessary without which adjustment to blindness becomes difficult.

Immediately after the onset of blindness the adult individual goes into a state of immobility or shock. When this initial stage is over and realisation occurs, he undergoes a state of depression akin to 'reactive depression', caused due to loss of his 'loved object', the sight. The feeling of hopelessness, self pity, lack of confidence, suicidal thoughts are typical of reactive depression. Some doctors give false hopes of regaining sight and this prevents the blind individual from fully recognising his new state for quite some time. Internal forces, such as resistance to change in personality, may also cause hindrance in adjustment. The acceptance of his new state is essential for the reorganizational process which is vitally necessary for adaptation.

CONGENITAL VS. ADVENTITIOUS BLINDNESS

Not much work has been carried out comparing the congenitally blind with the adventitiously blind persons. Cleaves, *et al.* (1979) compared the spatial memory configuration of the congenitally blind with the sighted adults. Results indicated a higher spatial error for early blinded individuals; earlier the sight loss, greater was the displacement error. Kapoor (1981) reported contending Robert that congenital blindness does not preclude development of normal affect and ego, whereas adventitious blindness is related to disruption of functioning with severe affect manifestations. This seems significant in terms of the extensive reorganisation the adventitiously blind has to go through. Similarly, Noebels *et al.* have also been reported (Kapoor, 1981) to have noted development of EEG abnormality, following early blindness. Those who lose their sight at a later age, have to undergo extensive reorganisation. Behavioral sequences that depend upon visual feedback must be discontinued and new behavioral sequences maintained. It is possible therefore that congenital and adventitious blindnesshave a different impact on personality.

PERSONALITY CHARACTERISTICS OF THE BLIND

Systematic study of psychological phenomenon with the blind was earlier limited primarily to the investigation of sensory aspects of blindness and comparative studies in respect of intelligence. Problems of spatial perception in the non-sighted people are discussed in the works of William James and Wilhelm Wundt (Lowenfeld, 1950). It was in Wundt's laboratory that Hellen conducted the first systematic study dealing with the psychological problems of blindness. Studies in intelligence and academic achievement were mainly available in the works of Hayes, a pioneer in this field.

It is during the last several decades, however, that enquiry concerning the social and emotional aspects of blindness has made a move. Several important volumes have contributed significantly to the crystalisation of these significant aspects (Cutsforth, 1933, Chevigny and Braverman, 1953). Even so it is important to remember that earlier studies of the emotional make up and adjustment of the visually disabled have been adversely affected by serious conceptual and methodological problems. The earliest investigators in this field were concerned with how well adjusted visually disabled people are, and how their adjustment compared with visually sighted people. In the area of psychological problems of the visually disabled, early research was oriented towards questioning the adjustment of the sightless compared to that of the sighted.

Interest in traditional inventory type description of variables such as general adjustment, yielded superficial results due to the usage of inventories with dubious validity. Factors underlying adjustment or core variables of personality were rather ignored in favour of mere static numerical group comparisons based on traditional paper and pencil inventory.

Kapoor (1981) has reported some studies using questionnaires/inventories. In an investigation by Griff's in 1935, the *Bernreuter Personality inventory* and *Laird Personality inventory* were used to investigate adjustment problems in the blind and the partially sighted adolescents, selected from three residential schools for the blind. Compared to the norms established for these tests, the blind were found to be less self-sufficient and less dominant than the sighted. However, since age, institutionalization and academic achievement of the experimental group differed from that of the standardisation group, it is rather difficult to evaluate the differences observed.

Brown (1938), administered the Clark Revision of the *Thurstone Personality Schedule* and the *Neymann-Kohlstedt Test* to 218 residential blind and 359 sighted public school students. On the former test the blind showed differential scores from the sighted. Although there were no significant differences between the blind and sighted groups on the Neymann-Kohlstedt performances, significant sex difference was, however observed ; the blind females were found to be more introvert than the sighted males. Degree of vision loss and socio-economic status was however, not controlled in this study. Hubbard (1945) compared the personality traits of 80 blind and 40 sighted adolescents using the *California Test of Personality* and found that the sighted subjects were found to be better adjusted ; but the two groups differed in sex, age intelligence and academic achievement. In Hastings' (1947) study, the blind and the sighted children were compared on *California Test* of Personality and *Mental Health Analysis* ; the blind were found to be more disturbed in self adjustment and had more mental health liabilities (though this study also lacks validity). Brieland (1950) and Barker (1953) found that there is significant relationship between blindness and personality adjustment.

Nevertheless, there are many studies which demonstrated no differences in adjustment between the visually disabled and the sighted groups (reviewed by Kapoor, 1981). It is worth mentioning, however, that separate studies using same test do not necessarily produce comparable results. In one study Dean (1965) presented data indicating that visually disabled adults scored lower on *Taylor Manifest Anxiety Scale* in comparison to the sighted ones. Though this may be interpreted as a sign of better adjustment for the sightless people, it may also be taken to point out the inapplicability of the test itself for this group.

Thus early attempts to investigate personality and adjustment characteristics of the visually disabled have fallen short of the mark, major causes of failures being weakness in methodology and design. Amount of visual impairment, residential *vs.* public school setting, degree of blindness (partial *vs.* total), nature of onset of blindness (Congenital *vs.* Adventitious blindness) are some of the factors which have not been controlled in most of these studies.

Morgan (1944) found partially sighted to have greater personality problems than the totally blind. Dean (1965), on the other hand found no differences in adjustment among the visually disabled, subdivided in terms of degree of disability, on a series on test instruments, purportedly reflecting adjustment.

In 'The New Bencon', Foulke contended that the 'Personality of the Blind' is rather an invalid concept and further maintained that personality is much too complex a concept to be accounted for by a single concept of situational variables. He conceived a person as a human organism receiving information; there are individual differences in the ability to formulate, maintain and adaptively modify plans which in turn select, integrate and regulate behavioral consequences which constitute the evidence for personality. Human beings have different personalities because of their different capacities with which they interact with different social environments, and because of different experiences that programme the central nervous system in unique way, for each individual. Individuals have pre-conceived notion about blindness ; they, hold certain belief about blindness. The blind at different stages of social development, have been attributed with different qualities. Thus the blind person experiences a social environment which is liable to be different from that of a sighted person.

Measures of adjustments of the blind have involved personality tests questionnaires which have been read aloud to them. Some researchers had the testing materials and responses transcribed in a tape recorder for the *Bell adjustment inventory* and the *Bernreuter Personality Inventory*. However, as Louttit (1957) observes, limitations in the avenues of sensory stimulation serve to heighten or make doubly significant what resources the blind child does possess for example, speech.

In response to the need for deeper, more meaningful and more dynamic study of the psycho-social aspects of all types of disability, an important new trend gained impetus. This trend has been facilitated by important contributions from psychological theory, particularly by Lewin's field theory (Lewin, 1935), as well as by an increasing orientation toward the basic problems of methodology and instrument development. Thus studies have begun to emerge which are based upon more appropriate concepts of adjustment which are oriented more toward factors underlying adjustment to visual disability, rather than static numerical comparisons as stated earlier. Such studies are also pointed towards assessing the effectiveness of the procedures designed to improve the adjustment of the visually disabled.

To replace paper and pencil inventories as major research instruments, *projective techniques* (McAndrew, 1948) were utilised with some effectiveness in the study of groups of varying visual disability. Later in data on social significance of blindness and longitudinal studies of the visually disabled began to make their appearance in research.

Cutsforth (1933) made the initial effort to collect data from interview and case study rather than on inventory schedule, while working with a blind population. Cutsforth observed that their physical fact of being blind is not perhaps so great a source of conflict and feeling of inferiority, as is the psychological fact of being treated as a person without sight. As also contended by Hellen Keller, "Not blindness but it is the attitude of seeing to the blind which is the hardest burden to bear".

Sommers in 1944 carried out an extensive investigation of 143 visually impaired adolescents selected from 10 residential schools for the blind through oral presentation of the *California Test of Personality*. He found personal and social adjustment to be poorer in the blind. Sommers, however realised the limitation of using a test, not standardized for the blind.

Sommers did not just use a personality test but also administered questionnaires and conducted controlled interviews with some of the blind subjects and their parents. The following patterns of first adjustive behaviour in blind adolescents have been described by her : (*i*) *Compensatory reactions*—in which limitations resulting from the handicap are recognised and accepted and an attempt is made to minimize them : (*ii*) *Denial reaction*—in which the actual limitations of being blind are not admitted ; (*iii*) *Defensive reaction* in which socially acceptable reasons are given through remoralization and projection ; (*iv*) *Withdrawal reaction*—in which retreat from frustrations and difficult situations prevail ; and (*v*) *Non-adjustive Behavior reactions* in which the subjects remain unadjusted and unable to deal with everyday problems of living.

It is worth mentioning here, however, that conclusions drawn by Sommers were not experimentally based findings.

Studies, in fact, are available to point out that visual disability may not necessarily lead to maladjustment or low achievement.

Bauman (1950) made an extensive investigation on 450 blind adults, studying their case records, administered structured interviews and a variety of cognitive and personality testing procedures. This study makes important contribution through the comparative delineation of factors relating to good and poor adjustment to visual disability. The sample was divided into equal sub-groups of (*i*) *well adjusted and self supporting*, (*ii*) *well adjusted not self supporting*, and (*iii*) *poorly adjusted subjects*. Despite considerable overlap, the well adjusted self supporting group was found to be significantly superior to the poorly adjusted group in terms of intelligence, manipulative ability and scores on personality test. Furthermore well adjusted group was found to have much better family environment than the poorly adjusted subjects in terms of greater commonality of interests, higher mutual resp.ct, sharing of common problems etc.

Norris *et al.* (1957) claimed that it was possible for them to identify the conditions for optimal personal development of the blind child. The concept of optimal development involved the factors like—*acquisition of independence*, *responsibility*, *freedom of fractioning* and a *potential*. Failure to provide the requisites for optimal development was considered to be the main hindrance in related functioning creating severe emotional problems.

McAndrew (1948) compared the performance of 25 blind children of mean age of 12.5 years with similar age-group of the deaf and the normal on a series of tasks reflecting aspects of psychological rigidity. In general the blind youngsters were found to be significantly more rigid than the normals, but less so than the deaf.

Ghai (1981) reported a study of Cutsforth (1951) who studied the phantasies of the blinds grouping them into three categories : (*i*) Phantasies in which the individual eradicates the source of social annoyance, (*ii*) Phantasies in which the individual attains marked superiority or security, and (*iii*) Phantasies in which the individual withdraws from the active situation in a surrender to a simple regressive preoccupation, mainly emotional in nature. According to Custforth, these phantasies were concerned with *social acceptance*, *personal achievement* and *withdrawn to a simpler and less demanding life*. He did not agree to subscribe to the idea that there is anything like world of darknesses for the blind. Moreover he also denies that the blind suffer because they cannot see or have a yearning for sight unless these attitudes are adopted by them under social pressure. In fact he believed that it is not blindness *per se* which changes and throughly reorganizes the entire mental life of the individual ; but it is rather a combination of blindness and frustration embedded in the social attitudes, which determines the personality of the individual.

Delafield (1976) examined various factors that determine adjustment of the handicapped person. It was emphasized that adjustment is a broad concept; and many behaviour patterns, self concepts, nature of blindness and attitude of others, are some of the important considerations. It was also pointed out that the role of self concept or self esteem is vitally important though it is usually neglected.

Orkan-Lecka (1978) made a study on adjustment to disability in blind adolescents in two different settings—the *level of disability acceptance*, and *degree of basic rehabilitation* as a function of the setting in which blind adolescents lived and received little education. The level of adjustment to disability was found to be significantly better in adolescents learning in integrated settings, than in those from special secondary schools. Candell and Larry (1977) studied the social adjustment of blind students with the help of *Bell adjustment inventory questionnaire*. The results indicated greater hostility in the blind than in the sighted

Lowenfeld (1955) observed that in the matter of personality and social factors, there are no basic differences between the blind and their normal sighted peers. It was asserted that any differences observed are unique to individuals and may result from situations similar to those faced by sighted persons. Kapoor and Sen (1984) also did not observe any significant difference between the blind and the sighted on some personality variables. Even though social attitude toward the blind is not generally unfavourable, social stereotyping conditions may not have favourable reactions toward the blind, and may influence their own self-concept and personality adjustment.

Barker *et al.* (1953) commented that the slight personality disturbances observed may be presumed to be associated with the nature of sensory deprivation prevailing in this type of disability. Dash and Mohanty (1981) reported that blind children are less aggressive, less moody, less gusty, withdrawn, less emotionally balanced; they are reported to be more rule abiding and have poorer self concept and self esteem in comparison to normal children.

Research evidence indicates that blindness *perse* does not produce abnormal mental or emotional states, experiential background is rather important in the formation of personality structure. Research evidence is available reflecting that the blind is dependence prone, frustrated, or cynic. However, the need for removing psychological and environmental barriers in the disabled's way of self-sufficiency, freedom and self-realization need not be over emphasized. Bauman (1950) commented that, "Personality pattern of the handicapped groups is based largely on the social and economic consequences of their handicap rather than upon the direct impact of the physical defect upon the personality". One study, in fact, recently conducted showed that there is always a high level of job anxiety for the disabled of all categories (Ghai & Sen, 1985).

STUDIES IN THE INDIAN CONTEXT

Studies conducted in India on blindness are not too many, and they do not necessarily cover all the aspects of blindness, though India has the second largest blind population in the World.

An early study was conducted to estimate the number of people suffering from blindness in India by a committee appointed by the Central Advisory Board of Education in 1944. The enumeration showed that out of the then total population of 400,000,000 about two million were unable to use their sight.

Ghai (1981) reported the study of Hasan and Ahmad (1961) investigating the socio-economic status of the blind employees ;

it was reported that 10 per cent of the blind belonged to the upper income group, 40 per cent to middle income group and 50 per cent to low income group. He also found that 52 per cent of blind have economic problems, 35 per cent have housing problems, 28 per cent have problems of medical treatment while about 26 per cent have recreational problems and 8 per cent have emotional problems. Prasad (1961) studied the performance of 100 blind persons, both men and women who secured job through the employment office. Most of those workers were found to be regular and punctual in their work, the efficiency was average, whereas loyalty, cleanliness and cooperativeness were found to be quite good.

Advan (1965) studied the educational and psychological problems of the blind ; the group of 580 consisted of blind persons in age group 7-21 years. This study revealed that the majority of the blind children came from poor families with inadequate educational background.

In a study comparing the blind with the sighted ones, Singh and Akhtar (1971) had two matched groups of samples of 20 subjects from each and administered to them Singh's self-concept scale to obtain measures of private self and social self in two separate forms. Items were read out to the blind group; differences between mean scores were not significant on the personal self. But the social self yielded significant mean differences ; mean scores on self-esteem of the two groups were also found to be significantly different. Non-handicapped group had an advantage over the handicapped one with respect to scores on self-esteem as well as social esteem. Jain *et al.* (1972) reported that the blind were found to be less extravert in comparison to their sighted ones.

Indian Council of Medical Research (ICMR, 1975) undertook a coordinated study of the prevalence of blindness in 1975 with the main objective of determining etiology of blindness. The study covered seven centres, the major causes of blindness identified were the diseases of the interior segment of the eye. Blindness due to cataract was found to be more prevalent in rural areas. Inam Shastri (1977) studied various aspects of prevention and rehabilitation of the blind.

Blind Relief Association (1977) conducted a study on the adjustment of the blind into the society (Virmani, 1977). Malhotra (1979) on behalf of the same institute delved into the causative factors of adjustment, it's nature and problems by studying the reciprocal attitude of the blind and the sight in the society. Attitude of parents, siblings and society towards the sightless and *vice-versa* were studied in addition to the personality measurement of the blind. Sethuraman (1979) conducted a study of 54 blind workers in a rehabilitation centre of Madurai to bring out some socio-economic data on blindness.

Ittyerah and Gupta (1981) made a comparative study on the congenitally blind and the sighted in terms of the tactual perception of size and form, in addition to handedness. The results showed that there was a significant difference between the blind and the sighted in their tactile performances. However, though left and right hand performances were significantly different, the two groups did not differ significantly on tactile performance with the right and left hand.

Kool (1981) studied Information processing in short term memory of physically handicapped using motor, tactile and other methods. The results showed that the blind are equal to, even better than the sighted in reproduction of location; but they show relatively poor performance than normal in reproduction of distance. This finding suggests that location information is kinaesthetically codable, and regular use of kinaesthetic modality (as is true with the blind) may improve performance. But visual imagery based on prior visual experience of space and one's own movement in space is necessary for the coding of distance of movement extent.

Blind subjects showed a poor use of pre-selection in coding of location and also failed to do so in the coding of distance information. They also showed a strong tendency to underestimate long targets and overestimate short targets than their sighted counterparts. The blind showed pro-active inhibition in both location and distance reproduction.

Studies on Social adjustment of the blind undertaken by Vasudeva (1979) and others showed their difficulty of adjustment. The general conclusion was however, that lack of sight does not necessarily produce any personality changes. In a comparative study of the personality characteristics of the blind, the deaf and the normal, Bhargava and Lavina (1981) found that the sensory disabled were more reserved, emotionally unstable, shy, dependent than the control group.

Batra (1981) studied the prospect of employability of the blind and the factors associated with their acceptability as the employees by the employers. The sample consisted of 83 blind persons who were employed during 1974 to 1976. It was found that six persons had left their jobs in 1977, reasons described for leaving were for betterment and to become self employed. The monthly income of the blind employees varied from Rs. 100 to Rs. 1,300; a majority of them were earning salaries up to Rs. 300 per month. The average monthly income of the office employees was much more than that of factory employees.

This study revealed that employers' opinion in regard to employing more blind persons become more positive as the frequency of the blind people having independent mobility at work place increased; and as their degree of satisfaction from the work of the blind employees increased. Furthermore, the degree of satisfaction of the employers with the work of blind employees increased, if the work performance of the blind employees was equal or more than that of their sighted counterparts and also if the punctuality of the blind employees increased.

The only factor with which the degree of satisfaction on the part of the employers was not found to be associated, was the extra assistance required by the blind while working. This may be due to the fact that the employer does not mind providing extra assistance to a blind employee, if he is otherwise reasonably satisfied with his work performance. Batra observed that the integration of the blind in the workplace was most successful in cases where the blind had self confidence and had their willingness for integration. The educational and occupational status helped the blind to have confidence in themselves.

Sinha (1982) studied personality adjustment of the blind and reported that blind children were as good in adjustment as their sighted peers. Qadri and Hussain (1982) studied a group of 20 blind students and found that most of them came from psychologically broken homes and suffered from emotional maladjustment; further they did not exhibit any interest either in their incurricular or co-curricular activities.

Jayasree (1982) conducted a comparative study of the manneristic behaviour of the blind and the sighted persons. Manneristic behaviour is often required as a mechanism for coping with anxiety and also regarded as a tension release mechanism. Four kinds of mechanism (head movement, eye poking and rubbing, clapping and jumping) were found to exist only in the blind children. The sighted children showed 13 other types of mannerisms in higher percentage than that of the blind children. But blind girls showed more mannerism in comparison to blind boys.

Singh and Pathak (1984) compared the blind with the sighted on four personality dimensions: Psychoticism(P), Extraversion (E), Neuroticism (N) and Lie score (L) as postulated by Eysenck and Eysenck (1978). The two groups did not differ significantly in any of the four scales, though there was some marginal difference in the lie scores between the two groups, the blind having the higher score. This perhaps suggested that the blind responded to the lie items in a more socially desirable manner.

Kapoor and Sen (1984) made a comparative study among congenitally blind, the adventitiously blind and their sighted peers on some personality and cognitive variables. It deemed to be appropriate to investigate into the intelligence level of the three groups and whether intelligence level of the blind affects the personality factors considered. Due to the non-availability of any standard intelligence test readily for the blind, Forward Digit Spans and Backward Digit Spans (FDS and BDS) were used which are supposed to reflect on Level I and Level II intelligence (Jensen, 1970). On the personality dimension, Neuroticism and Extraversion were measured by Eysenck's *Maudsley Personality Inventory* (MPI) (adapted by Jalota and Kapoor for Indian population) ; Personality Perceptual Rigidity (PPR) and Social Responsibility were also measured. The latter two scores were obtained by administering the Hindi translation of *Personality Perceptual Rigidity Questionnaire* of Schaie's

"Test of Behavioral Rigidity (T.B.R.)" (Schaie, 1960).

The three groups taken were congenitally blind, adventitiously blind and the sighted individuals of sample sizes 20, 17 and 20 respectively. They were administered MPI, TBR questionnaire, FDS and BDS scores were also obtained from each of them. The results indicated that the congenitally and adventitiously blind groups do not differ significantly from each other or from their sighted peers on the personality variables, emotional stability, personality perceptual rigidity and social responsibility. The sighted fared significantly better ($p < 7.01$ level) on FDS than the adventitiously blind. The sighted fared better on the cognitive variable measured; while on the personality variables considered, no significant differences were observed among the congenitally and adventitiously blind, and the sighted.

Goel and Sen (1985) have reported a few studies which were carried out recently in the context of personality dimensions of the visually handicapped by several students of psychology. The results on the 16 PF showed a large number of the subjects to have poor self concept and emotional instability, below average intelligence and physical dependence. They were found to be not fully cognizant of reality, and possessed a sense of insecurity. They were rated by their teachers as aggressive, un-inhibited, generally group dependent, sociable, predictable and emotionally maladjusted. The blind also showed less inter-individual variance in terms of perceptual-motor skills.

Ghai and Sen (1985) studied work adjustment and job anxiety of different categories of the handicapped in open employment. The sample consisted of 30 blind, 35 deaf, 30 orthopaedically handicapped and 30 normal industrial employees working in open employment. The work adjustment was assessed by an Indian adaptation of Rikard Palmer's *Work Adjustment Schedule* (1974). The supervisors who were closely associated with the employees rated them on the schedule ; the job anxiety of the subjects was assessed by a *Job Anxiety Questionnaire* developed by Srivastava and Sinha (1974). For the blind subjects, the questionnaire schedule was read out and for the deaf subjects the help of an interpreter was taken.

The results showed that the deaf had the best work adjustment followed by the orthopaedically handicapped, the blind and normal respectively. However, although on an overall basis the deaf group showed better work adjustment, on comparing the individuals engaged in the same kind of jobs, it was observed that the blind group was better adjusted than the deaf and the orthopaedically handicapped. This may be due to the fact that mannual job involved in such cases, were packing and assembling, and the deaf and orthopaedically handicapped groups are not as well equipped as the blind group. The nature of job, therefore, seems to be one of the important antecedents for work adjustment.

The blind group showed highest scores in the area of emotional stability. This was accounted for by the fact that the deaf unlike the blind, belonged to an institutional setting which is conducive to suppressing in individual, possibly lowering the emotional stability. In respect of job anxiety, the study has revealed a higher job-anxiety level for the disabled, the blind having the highest mean anxiety score followed by the deaf and the orthopaedically handicapped.

PREVENTION AND CURE OF BLINDNESS

According to the estimate of the Ministry of Health, out of nine million blind population in the country, five million are suffering from curable blindness while the remaining are considered to be incurably blind. Blindness due to cataract, glaucoma, trachoma, and infectious diseases of cornea and conjunctive are to some extent curable. However, medical treatment is not mostly available in rural areas, and about 80 per cents of the visually impaired live in villages. Moreover, it is also not unexpected (as has been noted in the NSSO report of 1983) that cases of non-reporting of blindness are much higher in rural areas than in urban areas. Cataract together with corneal opacity are reported to be the most dominant causes of blindness. Retinal datachment, occupational hazards are some other causes.

As a preventive step for blindness major precautions may be taken against the probable causes of blindness, such as infectious diseases, nutritional deficiencies, drug abuses in the expectant and lactating mothers and the new born babies and children. Proper hygienic care of eyes should be taught to the children as a routine right from the beginning. An eye that is cut or bruished should always be properly looked after, by keeping it cool and clean and consulting the doctor well in time. Early diagnosis of eye disorders often improve prognosis and brightens the chances of cure. Visually handicapped children can be identified from their behaviour. They often bump into things, have trouble in walking, and tend to be uncoordinated, etc. Children born with rubella syndrome (because of their mothers' were being affected by rubella during their pregnancies) may have very poor vision. However, proper immunization programme can reduce the number of rubella cases.

Out of various remedies reported surgical operation would be the most common one. Around 4,000 opthalmic surgeons mostly in cities, are available in India for curing blindness. The NSSO report (1983), however, reported that adverse economic condition as well as lack of knowledge about the facilities for treatment, were mainly responsible for not taking any treatment by the blind.

The Government of India has formulated a national programme for the control of blindness and visual impairment with the basic objective of prevention and cure of blindness. It has the programme of mobile opthalmic dispensaries to cover even rural interior parts.

The Central Council of Health, at its meeting held in April, 1975, recommended the adoption of a National Policy of evolving a comprehensive plan of action for prevention of blindness with the following strategies:

(*i*) To disseminate widely the information about eye care through all media of mass communication with particular emphasis on the ocular health of children, both pre-school and school going and all other vulnerable groups;

(*ii*) To orient teachers, social workers and students to the problem of eye care, including nutrition;

(*iii*) To augment opthalmic services in such a manner that relief can be given to the community in the minimum possible time by employing an extended "eye camp" approach;

(*iv*) To establish permanent infrastructure for community oriented eye health care at the peripheral, intermediate central levels.

The National Society for the Prevention of Blindness in India drew up a plan of action in 1982 (See Appendix I). This society observed the prevention of Blindness week from October 1-7-1985, with the basic theme of preventing eye injuries, for children.

The government has also incorporated into the Integrated Child Development Scheme (ICDS) the nutritional programme for prevention of nutritional blindness. Since 1970 the Royal Commonwealth Society for the Blind (RCSB), U.K., has sponsored a number of rural eye camps. It has also launched programmes in U.P., Gujarat, Tamilnadu and some other States covering about 310 villages and 30 urban slums to prevent blindness in children due to Xeropthalmia, which condition is known as blinding malnutrition associated with Vitamin A deficiency in childhood. According to a survey undertaken by the RCSB, 42,000 children in India are the victims of this disease. The Dholka project of Gujarat was sponsored by the RCSB with the initiative of few enthusiastic young members of the Rural Activities Committee (RAC) of the National Association for the Blind and the Honorary Secretary General of the NAB, Captain H.J.M. Desai. Since 1983, 200 blind persons have been benefited from this project.

EDUCATION AND SOCIAL REHABILITATION OF THE BLIND

Almost 80 per cent of human learning takes place through vision. So far as educational achievement is concerned, blind children begin school relatively late. They read slower and less widely. Such limited reading experience can be reflected also in their language acquisition and word comprehension. Dependence of academic achievement on reading skill, and the necessity of vision in reading, are presumable related with educational retardation found among most of the children with visual impairment (See Louttit, 1957). Almost 90 per cent of the children who have learning disability, are actually found to suffer from some form of visual problems. Some children experience the inability to get both eyes work together. This blockage in the visual system interferes with their abilities to receive and retain information. Persons who are congenitally blind, learn very differently from those who are adventitiously blind.

The visually handicapped children are found to be educationally retarded in comparison to their seeing counterparts by at least two or three years. Such children are also noted to have problems in school achievement as also some academic retardation, even when they use large types or the Braille system. On the whole they are found to be under-achievers, as compared to the comparable sighted children, in any grade. Their visual impairment is a factor which accounts for slower acquisition of information. They also have a slower reading rate and they lack concreteness in instructional procedures. This may be due to: (*i*) low sensory input, (*ii*) low level of information, (*iii*) restricted and crippled communication, (*iv*) restricted opportunity for orientation and mobility, and (*v*) several psychological and social complications, resulting from loss of vision.

The blind children also suffer in their educational attainments because of the fact that a good deal of their time is spent in visiting the doctor or the hospital for their treatment. All these tend to make a visually handicapped child's standard somewhat behind his sighted peer. In most of the cases, this can be recovered through proper education and training ; most teaching programmes for the blind heavily rely on auditory instruction, memory, and effective use of touch and senses. Talking books, cassette tapes, radio programmes can effectively impart information verbally. The use of Braille has become increasingly popular amongst the blind for reading, writing and even for typing, the system is being used by about ten per cent of the school and college going blind population. The blind students also use the library of Braille reference books.

Education of the blind is gradually becoming detached from special education classes meant for them. The present day ethos is to provide education to the blind along with the sighted in an integrated set up, mainstreaming them into regular classrooms with the provision of necessary accessories. Low restricted sensory input (as a result of the loss of or impairment in vision), affects an individual's behaviour and pattern of responses to the world around him. Poor power of imitation is one of the most important and signifiant factors associated with the delayed process of learning, lack of the geographical sense of orientation, direction, distance and space. Lack of sufficient idea of the external world, hinders in the development of normal vocabulary ; lack of proper mobility restricts the field of exploration, crippling the scope of learning. Development of psychological complexes, like inferiority complex, exhibitionism, etc., also greatly restricts the advancement of the process of learning in a smooth way.

All these factors result in social retardations. The education of the blind along with the sighted is aimed at creating healthy attitudes towards each other, paving the way gradually towards real integration of the blind in the world of the sighted. In fact, in a study Bauman (1950) compared 150 visually impaired boys and girls attending residential school for the blind and an equal number of the disabled children attending normal day schools. Using personality inventories she found that the moderately visually impaired adolescents showed higher anxiety and insecurity and more social and emotional adjustment problems than the visually impaired children in the integrated group.

Satisfactory adjustments of the blind often tend to be complicated because of parental attitudes both towards themselves and towards their blind children. Such attitudes are found to range from unfailing acceptance to complete rejection, feelings of guilt and denial. Such children need to be helped by their parents so that they are encouraged to make good use of remaining senses, as these will enhance development, mobility, language development, facilitation of communication and social development. Parents are to help these children to develop appropriate motor skills and independence. Such children need to be provided with rich stimulation and concrete experiences by taking them to field trips, to grocery stores, shops, farms, or other places of historical and cultural interest as also places of community services for excursion purposes. Instead of showing them compassion and pity, these children have to be encouraged to explore the house, the kitchen, the surroundings of the house and the neighbourhood, in order to help them in attaining some degree of confidence.

The Blind Relief Association (BRA) conducted a study in 1979 on the 'Adjustment of the Blind' reporting that the major factor responsible for the adjustment of the blind and the sighted appears to be lack of close and frequent interaction between the two groups. This would lead to suggest that the blind children, should, as far as possible, be placed in ordinary schools where they come into contact at an early age with the sighted children. Instead of going for general higher education, it would be desirable that the education of the blind is vocationalised, employers are not convinced enough about the job potentialities of the blind; this hurdle of prejudice needs to be overcome. Mobility training should be a must in all curriculum and school programmes.

A still more disturbing problem is that of the personal and social adjustment of these children. They are devalued or ridiculed by other children. Thus, they, begin to feel inadequate and inferior to them which leads to maladjustment. Village folk treat the blind members of the family as they would do to their cattles, they feed and look after them and don't expect anything of them. It is as if their blindness has robbed them of their intelligence, understanding and humanliness. This attitude prevailing in home, school and community causes maladjustment and the negative self-image in the blind. They become more negatively disposed when they sense the attitude of sighted persons towards them which gives them the feeling of inadequacy and frustration.

For the care, treatment, training or education of these handicapped children, certain educational procedures have to be adopted in order to make them as proficient and competent citizens as possible. Residential schools were started in European countries about two hundred years ago for the blind; and the first residential school was established in Paris in 1874 by Valentine Hauy. In the U.S.A., three schools were opened in Boston, New York and Philadelphia in 1832. H.G. Howe started a school for the blind in U.S.A., in 1866; but he believed that the partially seeing children should go to the school along with the ordinary children as far as practicable and that they are to be kept together with ordinary children to learn what they could. He advocated that residential schools should reject all children who could be taught in common schools.

Day schools for the blind began in 1900 in Chicago; and in 1933 the first special class for partially seeing children was started at Roxbury, Mass. The first local day school programme had special classes which had little scope for integration of visually impaired with sighted children. In United States the trend seemed to favour to have more integrated classes of the partially handicapped children and normal children, so that they can compete with other children and prepare themselves for survival in the modern world.

In 1921 the American foundation for the Blind paved the way for research and development for these group of handicapped. The American printing house for the Blind started providing educational resource materials. The Rehabilitation ACTS OF 1943 and 1945, which were off-shoots of the Social Security Act of 1935 started implementation of the rehabilitation of the Blind into the society through the State agencies for the blind. By the middle of the 20th Century, rehabilitation centres for the blind became quite common.

In England there are "Sunshine Homes" (Nurseries for blind children) which are very effectively engaged in caring and catering to the developmental needs of the visually impaired children, before they enter the primary schools. The NAB-Mata Lachmi Nursery for the blind in Bombay is the only institution in India which admits children between ages 2 and 5 and follows the usual Montessori Courses for them.

Before Independence there were 32 institutions for the blind in India. However, there are now about 350 educational and vocational institutions which can cater to the needs of only about 16,000 blind persons, mostly in urban areas. Paucity of number of such institutions is a problem; in addition to this, standards of the existing institutions are not always of a high order. Lack of sufficient number of resource persons, materials such as Braille text books and other special accessories are some of the major hurdles. The task of providing education and rehabilitation of the blind in a country like India is a mammoth one both in terms of quantity and quality. As a step towards improving the standards of teaching in schools for the handicapped, the Government of India included in the third plan a scheme for the training of teachers of the handicapped. This scheme undertook training of the teachers of the blind as well. There are Regional Centres for Training of teachers for the blind in Delhi, Bombay, Madras and Narendrapur (West Bengal). However, these are not sufficient for preparation of teachers to cater to the total needs of the country. The SNDT University, Bombay, conducts a six month Diploma course for training the teachers of the visually handicapped. The National Council for Educational Research and Training (NCERT), New Delhi, organises from time to time refresher courses and workshop and training of the teachers engaged in special education in different parts of the country. The Department of Teachers Education, special education and extension services organized a working group meeting to develop a two months in-service training programme for the resource teachers for Integrated Education of the disabled from July 17-21, 1984.

The existing institutions for the blind mainly impart education at the primary level only. Based on the National Policy Resolution 1977, the Government of India introduced the centrally sponsored Scheme of integrated education of disabled children. A salient feature of the scheme was education of specified groups of educable disabled children in the age group of 5-14 years in ordinary schools along with normal children. The introduction of the scheme created an awareness amongst all concerned of the abilities and capabilities of the disabled children for full participation in ordinary schools with normal children.

There are, however, a number of difficulties faced by the concerned authorities in the fullest implementation of integration policy. Despite some problems associated in its operation the scheme of integrated education for disabled children has made a definite impact on the educational advancement of disabled children, at least in the cities. These facilities need to be well developed for catering to the need of rural areas as well. The education of the blind with the sighted would facilitate actual integration of the blind into the society.

The blind, after leaving the school has to earn his livelihood in competition with the others in the society. It is of utmost importance that the blind receives such education which would enable him to be self-supporting. In India some blind have been provided employment in sheltered workshops which undertake sub-contracts of simple handicrafts and assembly works. Some blind are also going in for open employment and this concept was pioneered in 1954 for the first time in India by the National Association for the Blind (NAB). The NAB imparts vocational training at three centers in Bombay; it has also a number of employment officers whose objective is to negotiate with officers, factories, and plants for placement of the blind in simple repetitive jobs. The NAB workshop established in 1963 for the blind, provides training in light engineering, tailoring, assembling, carpentry, plastic moulding, brush making and fabrication of stationary items. The NAB is one of the pioneering welfare organisations in India. It runs a number of institutions and 15 branches all over the country. The NAB was concerned about the blind in rural areas, the Rural Activities Committees (RAC) were appointed to undertake rehabilitation services among rural blind population.

The Blind Relief Association (BRA), New Delhi, runs an Industrial Home for the Blind, the sheltered workshops has two sections, one handloom weaving and the other is candle making. A rehabilitation centre has also been organised by the NAB at Mount Abu.

The National Institute for the Visually Handicapped (NIVH) at Dehradun run by the Ministry of Welfare, Government of India is engaged in the rehabilitation programme for the blind. It also provides transitory work experience and self employment opportunities to the blind and consultancy to the voluntary organisations. It provides opportunities for development of skills in the areas of agriculture, candle making, caning, knitting, music, tailoring, sport, weaving, bag making, binding etc. The blind boys' Academy at Narendrapur, West Bengal, started industrial vocational training in 1964, and has assisted in the employment of blind persons in different industries. There are now employment Bureaus also, specifically for the blind; all these efforts have led to the employment of around 3,000 blind persons.

A very large percentage (almost 90 per cent) of blind people who pass out from institutions are dependent upon their families. They are unemployed, not necessarily because of lack of potentials, but because of unconcerned attitude of the society.

Given the appropriate environment for the development of the potentials of the visually impaired persons, the problem of blindness can be overcome to some extent. Blindness has occurred throughout the history of mankind. A number of luminaries in a variety of fields were blind. Homer, Milton, Surdas are a few of the many noteworthy illustrations whose status of blindness could not deter their talents from fruitful use for the society. In modern times also it is not difficult to find persons engaged in a variety of vocations and professions such as farmers, factory workers, musicians, teachers, administrators and even politicians and social workers. Dr. Rajendra Vyas, though blind, has done much for prevention and cure of blindness. Similarly, Shri Lal Advani, though blind, served the Government of India as an able administrator and a social worker. Delhi University is one of the few Universities which admits blind students in various courses; the Department of Education has blind students for its B.Ed. Course. Such persons though have led useful lives, there are millions of blind persons—men, women and children—who are leading a pathetic existence for want of opportunity and encouragement.

The fate of the blind women are even worse. Out of nine million blind, 50 per cent are women; in addition to their visual handicap, they are also handicapped by social prejudices, lack of education and traditional neglect. Birth of a blind girl is assumed to bring a life long burden for the family. Attempt is often made to conceal the presence of a blind girl in the family; and malnutrition, lack of education are often meted to her. The Poona School and Home for the Blind established in 1934, has taken a forward step in 1979 by establishing a training centre exclusively for blind women.

The NAB Committee took the initiative for the advancement of the status of blind women; and it conducted the first All India Seminar on "All round Development of Blind Women" at Bombay on 9-10 March, 1985. This seminar was attended by about 150 blind women from about 11 States.

Bhalerao (1986) has recently evaluated the impact of blind women's emancipation movement, in the global perspective. The author herself is a blind woman ; she points out that while every third blind person in the world is an Indian, the employment situation of blind women is quite deplorable. The Special Employment Exchanges run by various State governments are not much of help, as they have hardly been able to find job for the blind women. The plight of blind women is much more appalling, particularly in the rural areas.

However, in traditional Indian Society, the idea of a sightless woman to be independent is not very encouraging, job opportunities for blind women are scarce in urban areas as well. Although 70 per cent of the blind women get married, very rarely they have sighted spouses. Blind men, on the other hand, when married, usually have non-handicapped wives. Because of the neglect of the families and society, blind women very rarely find the opportunity for social rehabilitation and almost invariably feel completely isolated from the mainstream.

Any civilised society would like to see that the vast multitude of blind persons are rehabilitated into its fold, and lead as normal a life as practicable. Loss of sight puts the individual out of gear, affects one's mental health. Social rehabilitation would demand, among other things, restoration of morale in the affected persons who have been blinded in their adult lives, to help them 'adjusted to blindness', and become useful members of the society.

It is both necessary to cure the curably blind and to put the incurably blind into the fabrics of social matrix.

CHAPTER 5

The Hearing Handicapped

Next to vision, the most important sense is audition. Every day activity is regulated and controlled by the auditory sense. If the sense of hearing is so affected that sounds for ordinary purposes of life are not properly perceived, then such non-functional hearing condition is known as deafness and the person so affected, is called deaf. Deafness is the most serious handicapping condition; of all the forms of physical handicaps, it is the only handicap which is not visible. Deafness engenders the most conflicting emotions and leaves the person affected in the most baffling situation; the handicap of deafness is unique, since deafness as such is invisible. The communication barrier between the deaf person and others is simply too high to be readily surmounted. On a sensory level it isolates its victim from the total world of sound and sound experiences.

Sound is a form of energy which emanates from any vibrating body, producing sound waves. These sound waves affecting the ear-drum create the sensation of hearing. Sound waves have two characteristics; one is intensity whose physical measure is amplitude and corresponding psychological measure is loudness, the other is pitch, depending on frequency or wave length. The shorter the wave-length, the more rapidly the waves strike the ear-drum. The frequency or rapidity of the vibration determines the pitch of the sound; the shorter the wave-length the higher is the pitch of the sound. Pitch determines the quality of the sound which depends upon the frequency of the vibration. The frequency is expressed in terms of cycles per second (cps) which is also known as Hertz (Hz).

The human ear is capable of responding to sound over a very wide range of frequency, extending from 16-20 Hz to about 20,000-30,000 Hz. Ordinary speech ranges from 500 to 2,000 Hz; and 500, 1,000 and 2,000 are known as speech frequencies. For detecting the degree of deafness or the capacity to hear sounds, the audiometer is used and a person's audiogram is characterised for various sounds of different pitch and intensity with the thresholds as well as the ranges. The measurement of hearing is for pure tones and speech, and to map out the audiogram of the individual. However, usually human being would have difficulty in hearing sounds of frequency greater than 10,000—12,000 Hz.

The deaf by definition are those for whom the sense of hearing is so impaired as to have precluded normal acquisition of language hearing. They are not capable of learning speech through avenue of hearing; or even if their hearing impairment was acquired soon after "natural" speech was learned, they have lost their speaking ability or have severe impairment in it. The congenitally deaf is one who is born without hearing and the adventitiously deaf is one who was born with hearing sufficient for acquisition of speech, but later, as a result of illness or accident, suffered severe hearing impairment. Usually, however no organic conditions are associated with deafness that might prevent the development of speech.

Human being mainly communicate through speech. The children learn to speak the language at home and in its surroundings by hearing others speak. The deaf children, however, do not learn to speak the language spoken around by others, as they are not able to hear others speak. Nevertheless, many deaf children develop speech and other language skills, though the children who are deaf or who have severe impaired hearing do not learn the language in the same way or at the same rate. Because of this the term "deaf-mute" has fallen into disrepute and obsolete as the implication is that the deaf is unable to speak.

From infancy the deaf child is denied of all normal means of communication; as he cannot hear, he cannot speak, and because of lack of speech and language, he cannot learn. On an intellectual level it deprives him of the primary modality in the vital process of developing inter-relationship with other persons upon which depends his social, occupational and emotional adjustments.

Deafness as a handicap isolates a person from his family, his peers and his community. He is subjected to extremely negative attitudes by those who do not understand the nature of this disability. Deafness or the hearing handicap is a deficiency which can neither be seen not heard. There is a saying, 'You can see blindness, but you cannot see deafness'. Its painful and rather shocking effect which becomes discernible only when the affected child does not start talking like other children at the age of one year or so. Relevance of hearing ability is intimately connected with the development of language and communication. Usually, however, no organic conditions are associated with deafness that might prevent the development of speech.

Handicap caused by deafness is the difficulty in establishing communication through speech and language which is so essential for normal living; as language is to be acquired by all for making friends, exchanging ideas, carrying on business and day to day life transactions. Language is so intricately involved in the thought processes and especially in making fine abstractions and distinctions of meaning as well as communicating with others, that certain minimum level of attainment in linguistic skills is an essential prerequisite to a child's formal education.

MAGNITUDE OF THE PROBLEM

According to the Government of India sources, the number of handicapped people including deaf is about ten percent of the total population and there is an average annual increase of 40,000 disabled persons. It is estimated that the deaf population in India is about 2.5 millions. In USSR the deaf population is about one percent of the total population. In the USA it is estimated that about 0.1 per cent of the children of school going age are deaf and about 0.5 per cent are partially deaf. Indian census of 1931 showed that there were 1,37,680 males and 93,215 females who were deaf, and that about 66 per 1,00,000 of the general population were deaf. Deaf mute children between 5 & 15 years comprised of 37,075 boys and 24,692 girls. According to Uday Shankar (1976), there would be about 1,25,C00 totally deaf children and about 13 75,000 partially deaf, either in one ear or in both the ears. The last reliable figure reported in 1974 was found to be about two million deaf in India. Some sample surveys in city like Bombay and general findings of workers in the field, indicated that about three would be deaf out of 1,000 persons; thus more than ten crores of people were suspected to be deaf.

The 36th round of the NSSO conducted in 1981 (NSS Report, 1983) reported that the prevalence rate of hearing disability amongst the rural population of the country was estimated to be 553 per 1,00,000 population, as against 390 for urban population. On all India basis the rates for males and females were found to be 595 and 510 respectively for the rural areas, the same being 386 and 395 for males and females respectively for urban areas. About 187 males per 1,00,000 males in the rural areas and 120 males in the urban areas of the country as a whole, were reported to have hearing disability from birth. The prevalence of disability from birth amongst females was estimated to be 146 and 96 in the rural and urban sectors respectively.

MEASUREMENT AND CONDITIONS OF HEARING LOSS

Hearing loss around 40 db is known as hard of hearing. The *hard of hearing* cases are those for whom the hearing, although defective, is functioning with or without a hearing aid. Though their defects and difficulties are considerable, nevertheless they learn to speak essentially through the avenue of hearing. Hearing loss around 70 db is known as partial deafness, where as a person having hearing loss more than 80 db is known as severely or profoundly deaf. Davis (1960) classified hard of hearing children into four groups, based on their average reception of speech, determined by averaging the hearing levels for pure tones at 500, 1,000, and 2,000, cps. The four groups thus differentiated are: (*i*) less than 30 db loss for speech, (*ii*) between 30 and 45 db, (*iii*) between 45 and 60 db and (*iv*) between 60 and 80 db. Loss beyond these levels would designate the child as profoundly deaf needing special schooling. In either of these types, the condition may be right from birth or before acquiring speech; or it may start after acquiring speech and language during adolescence or even later. It has been estimated that the incidence of impaired hearing in the children of school-going age is between five to ten per cent.

There are two functional aspects in the hearing part of the ear. One is the perceiving apparatus which includes the cochlea and the auditory nerve ; this perceiving system analyses and interprets the sounds reaching it. The second system consists of the conducting apparatus which includes the external auditory canal, the middle ear cleft and the labyrinth windows. The function of this system is to convey or conduct sounds to the perceiving apparatus. Deafness may result from the malfunctioning of either of the two functional systems.

In conductive deafness the parts involved are either outer ear or middle ear. Thus, *Conductive loss* is associated with external or middle ear abnormalities which impede the transmission of sound energy. Abnormalities may include an accumulation of hardened wax, the presence of a foreign body, structural malformation, such as incomplete canal or an exceedingly narrow canal. Except for structural abnormality, hearing loss is usually temporary. Middle ear involvement includes conditions that impedes vibratory transmissive functions of the ossicles, infections of middle ear, or excessive fluid etc.

In mild form of conductive deafness there is usually greater loss for low tones than for higher tones. A pure conductive deafness may result in a hearing loss of about 60 db. The conductive deafness is, in general, curable; as in most cases, it is amenable to medical and surgical treatment. Many a times affected individuals may even regain normal hearing with the help of a good hearing aid, as his perceiving apparatus is still in tact.

The second type, *Sensorineural hearing loss* results from involvement of inner ear or those of eighth (auditory) nerve, in this condition reception or perception of sound is impaired. In perceptive deafness hearing for high tones is usually affected earlier than the hearing for low tones. The part involved in this deafness is inner ear and is not curable as the condition is not amenable to medical or surgical treatment. However, the affected person can always be helped to some extent by the constant and proper use of suitable hearing aid; learning to lip-read may also be helpful in such situations.

There is another type of deafness, known as mixed type, in which both the perceiving and conducting apparatuses are affected, meaning thereby involvement of all hearing parts of the ear, *viz.*, the outer ear, the middle ear and the inner ear. So far as treatment is concerned, only the conduction part can be treated; other condition is not generally curable. However, in such cases too, the hearing aids and training in lip-reading can be of some help.

Still there is another type of deafness known as central deafness. The affected parts in this condition may include areas beyond inner ear, the eighth nerve of hearing, brain stem and auditory cortex. This condition is virtually not curable. However, the condition like tumor in the eighth nerve of hearing can be surgically removed. Cases not curable by medical or surgical treatment need special education training for ameliorating the condition. For such conditions, the main avenue to learn communication is through vision. They learn to communicate through gestures and signs.

CAUSES OF DEAFNESS

Following causes and factors have usually been identified in different types of deafness.

Conductive Deafness

Besides being congenital when outer and middle ears are malformed or not formed at all, it may be caused due to:

(*i*) Accumulation of wax in the external auditory canal; (*ii*) External canal is partially or fully closed, because of injury, infection, foreign bodies within the ear canal etc ; (*iii*) Raptured ear-drum due to infection, outside injury, blasts and explosions, sudden decompression of air during air flight ; (*iv*) Blocking at Eustachian tube because of frequent colds causing upper respiratory problems and inflammation of middle ear ; (*v*) Acute and chronic suppurative otities media ; (*vi*) New growth in the middle ear cleft ; (*vii*) Frequent ear aches and running ears, ear-drum is ruptured because of too much pus : and (*viii*) Miscellaneous causes.

Perceptive Deafness/Nerve Deafness

Following causes are usually ascribed for this type of deafness:

(*i*) Hereditary factors are present and there is a history of deafness running in the concerned family ; (*ii*) Consanguinous marriages ; (*iii*) During early pre-natal stage, if mother suffers from rubella, chicken pox, measles and virus infections, the immature inner ear, the cochlea of the unborn baby is either damaged or its development is arrested ; (*iv*) During neo-natal stage, nerve cells including cochlear nuclei are strained because of Rh factor, premature birth, or kernicterus (a kind of nuclear jaundice), or other acute high fever of unknown origin; (*v*) During post-natal stage, if the child suffers from acute febrile illness especially measles, mumps, whooping cough, diptheria, meningities and high fever of unknown nature ; (*vi*) If tonic agents of quinine and mycin groups and other antibiotics are used in excess for treatment ; (*vii*) Loss of hearing taking place because of old age (presbycusis), also known as senile deafness. Elderly persons go deaf due to head injuries, pressure changes, continuous exposure to intensive noise sources, etc; (*viii*) Deafness may also result from acoustic tumours, Meniere's disease causing tinnitus and dizziness; and (*ix*) Unknown causes.

PREVENTION OF DEAFNESS

Taking into consideration the increasing rate of population of India, the proportionate number of deaf population also has a definite trend to increase. Rapid industrialization of the cities, street accidents, use of drugs and pills, air crashes, bomb explosions, etc. are liable to increase the number of deaf persons in an incredible manner. Some other situations which are conducive to the increasing problem of deafness are epidemics like small pox, scarlet fever, mumps, meningitis, typhoid and other fevers and also electrical accidents like effects of being thrown away by electrical shocks, or accidents, or psychological shocks afflicted to the expectant mothers, and the like.

Various factors either singly or in combination can lead to deafness in a new born. As a preventive step major precautions can be taken in the form of proper care of the mother during antenatal stage and during delivery as also proper care of the neonate.

Familial and hereditary factors are difficult to control ; it is also difficult to make any prediction of deafness as also its identification. Detection of deafness at very young age is quite difficult. It is almost impossible to test the hearing of the entire children population for identification of hearing impairment problem. However, babies 'at risk' may be systematically screened and examined for any possible hearing loss. This would help in identifying the majority of the deaf children. Various factors are associated with babies 'at risk'. For identification purposes, these are : (*a*) presence of deaf child already in the family because of hereditary factor, (*b*) German measles of rubella during early pregnancy of the mother, (*c*) severe illness or viral infection or other foetal distress in early pregnancy necessitating use of chemotherapy or other drugs, or mycine or quinine group of drugs, (*d*) Tonemia of pregnancy. (*e*) prolonged and difficult labour, (*f*) pre-mature birth, (*g*) Rh-incompatibility, birth trauma or high fever, (*h*) anaemia, (*i*) neo-natal jaundice, (*j*) head injury, (*k*) infection of ear in childhood, (*l*) acute infection as mumps, measles in childhood or meningities, typhoid and other serious illness during childhood.

Children 'at risk' therefore, need to be tapped and proper precautions should be taken, though prevention of such cases is not always within human control. Some hereditary causes may be assumed to operate when certain families are found to have more than one deaf child. In a UGC symposium on the physically handicapped, held at the University of Poona, in 1981, it was reported that in a school for the deaf about 36 deaf children belonged to 12 to 14 families which had either one or two deaf boys or girls (Joshi, 1981).

Mother's suspicion may arose quite early because of failure of the infant to respond to sounds at the early age between 3 and 5 months, lack of facial expression, failure to use normal voice, defective speech etc. Whenever, any such complaint is made, immediate medical check up needs to be called for.

SOME PROBLEMS ASSOCIATED WITH DEAFNESS

An exact assessment of the loss of hearing in any child involves a systematic or proper measurement of the hearing quality in the child, which is usually carried out with the help of certain instruments. Hearing loss is objectively measured in terms of decibles ; pure-tone audiometer is widely used for this purpose. The teacher in the class-room can easily detect the hearing disability in a child. The affected child may show some degree of absent mindedness in his behaviour, or he may try to listen by turning to one side or by putting his ear towards the speaker, or he may put his hand behind his ear or he may become unattentive. Some hearing difficulty may also be indicated as it becomes evident from some confusion or obstinacy on the part of the child, or his failure to do his regular homework The teacher may also suspect the hearing problem, if a child is reluctant to participate in class-room activities. He may exhibit some behaviour problems, such as showing off or trying to over do things in order to overcompensate for his failure to grasp the lesson in the class. Impaired hearing may also be indicated if there is delay in the development of language or if the child's use of language, written and spoken, is defective. A child thus affected, cannot comprehend verbal messages, or he cannot speak, read or write properly, as the language output in many of these forms depends on the language input.

Any cause of deafness since birth is liable to affect the emotional and social life of the person suffering from the handicap. The curse of being away from the society in which a person is moving by facing a complete life of silence, is not a joke. The deaf is not basically different in his innate psychological potentialities from the hearing child. However, it is essential for the parents and teachers of the deaf to have an insight in understanding the psychological factors that are intimately related with his communication skill.

The problems associated with different conditions of deafness are manifold. In the hard-of-hearing condition, development of speech may be delayed, sound from a distance, say, of two meters cannot be heard; there may be failure to comprehend speech, if not properly motivated and alert; and there may be defective articulation, in spite of having a normal voice. Psychologically the affected person is liable to be under constant strain of deliberate listening and feeling of frustration; he may demand repetition or request the speaker to speak louder. His quality of voice may deteriorate gradually.

Under the condition of partial hearing, natural development of speech and language is not possible; the articulation defects become more prominent, the quality of voice also deteriorates. He will have difficulty in oral communication. He may lose the sense of well being and may live constantly under the strain of listening. He may develop the feeling of being let down, and may feel cut-off from normal hearing environment. He may develop many behavioural problems including persecutory ideas and suspicious nature.

In the profoundly deaf condition, voice will be laryngeal and strained. Natural development of speech and language will not be possible, and he will be using only gestures and signs for communication. He will feel cut-off and isolated from the world of sound. He will shun the society of normal persons and will feel depressed and frustrated and may develop various types of behaviour problems.

COGNITIVE CHARACTERISTICS OF THE DEAF

Cognitive development of the deaf child has been a provocative and challenging field for the psychologists for a long time. The relations between language and thought, attainment of concepts, perceptual motor processes, attributes of memory functioning, performance on intelligence tests and academic achievements are some of the related aspects in this context. There is, however, no clear picture as yet in these areas. Research in cognitive development of deaf children has been considered under:

(*i*) intelligence as measured by IQ tests, (*ii*) academic achievement, (*iii*) attainment of concepts, (*iv*) memory and finally, (*v*) perceptual or motor functioning and sensory compensation (substitution of one sensory mode for another) in information processing.

The deaf is not basically different in his innate psychological potentialities from the hearing child. However, it is essential for the parents and teachers of the deaf to have an insight in understanding the psychological factors that are intimately related with his communication skill. There is no reason to suspect limited mental ability because of impaired hearing itself, unless it is coupled with some deterioration or malfunctioning of the brain which may also occur in other disability conditions.

The mental growth of the deaf child is different in many ways from that of the hearing child; nevertheless, there are also certain points of similarity between them; they have the same intellectual endowment and the same desire to communicate. They want to be like other people and they also possess the same feelings and emotions. The only difference is that the deaf child lacks the ability to hear and consequently suffers from language handicap; but language provides the basic means of communication. Proper assessment of abilities of the handicapped is essential for any kind of rehabilitation programme and to develop self-reliance for the affected individuals.

Intelligence

The level of cognitive development is assessed traditionally by the evaluation of performance on standard intelligence tests. There is a common belief that deaf people are linguistically deficit; and, therefore, much interest has been shown over the years into the intellectual processes in deaf children.

In the 19th century, educators of the deaf were interested in the nature of deaf children's thought before interaction (communication before the age of ten usually was dependent on a primitive gesture system developed by the deaf children and their families). William James (1890) and Binet and Simon (1910) argued that thought processes were developed before language, in the deaf. James noted in the cases of two deaf persons concerning their thought before instruction (at about age 10), the presence of abstract and metaphysical conceptions, even when the only language was that of pantomime. Booth (1878) pointed out that thought was independent of various modes of expression and that thought and language were separate and distinctive processes. According to Booth, it is not whether deaf people think in words or in gestures—but which words or gestures—come first to mind when thought seeks expression.

Problem of assessment of intelligence of the deaf is much more complicated than ordinary criticisms laid against intelligence tests. As can be expected, in many cases the deaf possess minimum speech skills and have difficulty in understanding what is expected of them, unless the assessor or evaluator concerned, is experienced in dealing with the deaf. The scores of the deaf children are usually depressed, if a test requires proficiency in speech or speech reading or proficiency in the knowledge of standard English (where the test is in English language). Scores in timed tests are also depressed, because of communication difficulties. Vernon and Brown (1964) have discussed the problem of selecting most appropriate tests of intelligence for use with the deaf.

The notion about the deaf's intellectual level has changed over the years. Pintner *et al.*, (1941), for example, came to the conclusion that the deaf are inferior by about 10 IQ points as compared to hearing persons; and there are relatively less variation across different tests in this matter. For instance, mean IQ was found to be 88 in *Draw-A-Man-Test*, 91 in performance test and 86 in drawing on paper test, in contrast to mean IQ of 100 in each case for the hearing children. An early review of studies between 1900 and 1930 concluded that the deaf children are retarded by three to four years in comparison with hearing children, and that their IQ scores are around 90 on standard performance scales.

Rosenstein (1961) and Vernon (1967) observed that as such deaf are intellectually normal persons; and it was also noted that the deaf do not differ from the hearing persons in conceptual performance, when the linguistic factors involved were within the language experience of the deaf children. Furth (1964) also reached the same conclusion pointing out that if the specific task conditions do not favour linguistic habits or for that matter, lack of general experience is not a factor, the deaf are not inferior to hearing persons. Thus by mid-sixties the consensus reached was that the deaf are not intellectually deficient, though they may be linguistically impoverished or language deficient.

Vernon (1969) reviewed a large number of studies and concluded that the deaf and hard-of hearing children have essentially the same distribution of intelligence as the general population, even though the mean score may be slightly lower for the deaf children than for the normal children. The tests frequently used were—*Leiter International Performance Scale, The Ontario School Ability Examination, Hiskey-Nebraska Test* (*Nebraska Test of Learning Aptitude*). The most widely used test is *WISC* which is now available in revised form as *WISC-R* (1974) and is found to yield fairly valid IQ scores for deaf children ages between 9 and 16 years. Because of difficulties in administering verbal tests, the verbal scale is usually omitted fram the battery and IQ is calculated from performance tesls alone. On *WISC-R* (1974) Anderson and Sisco (1977) found that deaf children as such, performed significantly below their hearing peers on subtests of coding and picture arrangement.

The conclusion is that deaf children usually score within the normal range on performance scales of intelligence tests (with a slightly lower mean score), provided the tests used are non-verbal and do not require a high level of language either in input (instruction) or output (response). Considering the problems inherent in test administration, as well as the fact that many deaf children can be expected to have additional difficulties that interfere with intellectual development, it is not uncommon to find that the apparently normal intellectual capacity of most deaf children is not reflected in their academic achievement.

Because of limited communication, the learning of the impaired child is more limited in verbal or language usage in comparison to his normal peer. "The impaired-hearing tend to develop their visual powers to the maximum and hence are apt to make a relatively better showing on the non-language test materials which feature Visual Content". (Baker, 1959 ; p. 352).

The intelligence test is the most used instrument in the psychological diagnosis of deaf children. It is used so often because it serves different purposes. It helps to assess the IQ of the child which can indicate the child's learning ability ; as also it helps to discover the strong and the weak points in the child's ability. It provides the psychologist a standardised instrument for observation of the subject. It also makes the psychologist aware of the child's learning attitude, level of motivation and concentration, as also his anxiety for failure.

Deaf children experience profound difficulties in learning to read although the details of why this is so, remain open to speculation (Conard, 1977). Again, those deaf children who appear to utilise a speech based code for memorising words, learn to read significantly better than those who do not do so (Conard, 1979).

Poor reading achievement of deaf has been noted time and again. However, as noted by Ewoldt (1977), "Reading is viewed as a receptive language process in which readers actively search for meaning. Because readers do not always have productive control over appropriate labels for concepts, psycholinguistic research looks beyond the production of labels for other evidence that a concept has been grasped". Using the model and methodology known as *miscue analysis* as developed by Goodman and Burke (1970) and Goodman (1976), Ewoldt analyzed the reading strategies for four profoundly deaf children of ages between 7 and 17. This approach emphasizes student's strength rather than weaknesses, enabling the investigator to view the possible progressive understanding of material by the reader from the beginning to the end of a particular passage. The results showed that students did acquire meaning through reading, in spite of high percentage of actual semantic and syntactic errors, retelling scores were fairly high and that they interacted with the total story.

Thus deaf children apparently have normal intelligence, but their school performance is miserably below normal. This discrepancy can be explained by examining the process by which deaf children attain concepts that enable them to engage in logical thought. Much of the recent research on cognitive development in children has been based on Jean Piaget's work (1962, 1969). Furth (1966) used a Piagetian approach in his research on cognitive development of deaf children. Furth quoted Piaget, who held a theory of thinking that deaf children can grow up into thinking human beings, even though they do not possess much language. The inferior performance of the deaf is parsimoniously attributed to either lack of general experience which is no longer manifested by adulthood, or to specific task conditions which favour linguistic habits. Experiential deficiency also may lead to intellectual poverty (See Sen, A., 1976). According to Piaget, language is a principal and preferred medium of thinking for a developed mind in the formal operative stage. Where deaf persons, in general, fall short of, is at the formal operative level, that is, the deaf rarely reach the formal operative thinking, and then they cannot develop intellectually appreciably further because they do not have the tool of language.

A non-verbal IQ gives an indication for the prediction of the possible attainments of deaf children in arithmetic, reading, speech and speech reading. The performance IQ of a child can be an important factor in the discussion with his parents. It can reveal the positive non-verbal cognitive ability of the deaf child. This knowledge can support the acceptance process and positive attitude of the parents towards the child

A non-verbal test and mathematical thinking refer both to the function of the right hemisphere. The left hemisphere deals with processes of learning a language. For learning a verbal language, deaf children, however, need a minimal level of intelligence. Deaf children of subnormal intelligence cannot cope with a verbal language; they cannot just reach the level of ideo-visual reading.

The profile of intelligence can be more important than just the IQ. It is always useful to apply two different types of memory subtests, namely one subtest for the simultaneous visual memory and another subtest for the non-verbal successive memory.

Lennenberg (1964) after reviewing the literature on cognitive, non-verbal investigations of deaf children, observes that "On strictly cognitive tasks it has been experimentally shown that even pre-school and thus "pre-language" deaf children perform no worse than hearing children". Normal hearing child has a speaking vocabulary of 2,000 or more words, and several times that number for comprehension, by the time he reaches school age. The deaf child, on the other hand, when enters a school for the deaf, at 5 years of age, may have no working vocabulary at all. If, in addition, he has not developed a gesture (sign) system, he has in effect, no functional communication.

This is the basis of the position taken by Furth (1966) on the need to establish an early visual language (gesture) system for congenitally deaf children. Learning to talk, and so to think, without recourse to oral language—enhances the deaf child's cognitive and intellectual development. Waiting to establish an oral language system may impair such development. Furth argued that "As a direct result of linguistic incompetence, the deaf fail or are poor in all tasks which are specifically verbal or on a few non-verbal tasks in which linguistic habits afford a direct advantage". As an indirect result, the deaf lack information and exhibit a minimum amount of intellectual curiosity. "They have less opportunity and training to think".

Based on these observations, Furth proposed that the deficiencies associated with the linguistic incompetence of the deaf could be overcome, if non-verbal methods of instruction and communication are more encouraged both at home in the earliest year and in formal school education. "Parents must have recourse to distinguishable signs and use these together with speech. Practically all deaf children could then be expected to reach a basic competence in language, just as all hearing children in any society learn the language to which they are exposed". In some deaf children sufficient residual hearing would enable them to make use to learn to attend to speakers through lip movement, or face reading and their articulatory and manual gesture. Some may have enhanced hearing through hearing aid; in general, however, the incidence of speech defects and of language retardation is almost universal among pre-school deaf children.

The deaf is often identified to be academically retarded. The general level of academic achievement in deaf children is much below than that can be expected from performance on tests of cognitive development. It is interesting to note that deaf children of deaf parents were observed to perform at a higher level on tests of academic achievement than the deaf children of hearing parents (Meadow, 1980).

Most deaf children of school going age have a slower rate of academic achievement than do their hearing peers. However, unless mental retardation is an associated problem, most deaf children learn to read and write, and show progress in other school subjects. Meyerson (1955) observed that, "For the present and past generations of the deaf upon whom the test results were obtained, language and communication skills have lapsed far behind intelligence, CA and interests". This implies that deaf children are not being taught as they need to be taught to take full advantage of their intellectual potential.

This position has, however, been challenged by Moores (1978), who came to the conclusion that the condition of deafness imposes no limitations on the intellectual capabilities of individuals. Moreover, there is no evidence to suggest that deaf persons think in more "concrete" ways than the hearing ones, or that their intellectual functioning is in no way less sophisticated. As a group, deaf people function within the normal range of intelligence, and deaf individuals exhibit the same wide variability as the hearing population. The deaf do not lack language abilities—no matter what scores are obtained on standardized tests of reading achievement; and in no way they can be considered a-linguistic.

Furth (1966) concluded that logical, intelligent thinking does not need the support of a linguistic symbol system; intelligence is not dependent upon language, but language is dependent on the structure of intelligence. An overview of studies comparing the performance of deaf children with hearing children on tasks reflecting concept attainment, indicates that deaf children perform as well as the hearing children during the earlier ages and stages of cognitive development (Piagetian) with a widening gap at later ages. The conclusion reached that linguistic competence is an intervening variable mediating between IQ and a number of indices of cognitive performance. Furth suggested that experience is the intervening variable between language and cognition. This would, however, imply that if language deprivation leads to experiential deprivation, this in turn leads to deficient or retarded cognitive development. This would seem to be the evidence that thinking is influenced by language (contrary to Furth's idea), although in an indirect manner. The controversy thus still remains alive.

Memory

Memory has been used as an indicator of cognitive abilities. Some studies reported that the deaf show poorer delayed recall than hearing children, though they are equally well on immediate recall. A number of studies suggest conditions under which deaf children are deficient or equivalent in comparison to their hearing peers. A simple and ingenious method for demonstrating visual short-term-memory (STM) coding was developed by O'Connor and Hermelin (1973). Children were shown three visually presented digits which were exposed successively in three windows, in such a way that the left to right order never corresponded with the temporal sequential order. When asked to recall these digits, normal children responded in terms of temporal order; deaf children, on the other hand, recalled in terms of the spatial (left to right) order. This pattern of results appeared consistent with the notion that the normal children encoded the digits in an auditory-temporal fashion, while the deaf remembered them in a visual-spatial form. It would be interesting to apply this procedure to retarded readers. In so far as they are reluctant to use a phonological STM code, they might be expected to perform in a similar way to deaf children in this situation.

Perceptual and Motor Development

Studies of the perceptual and motor development of deaf children have been designed to investigate the basis for their different levels of cognitive achievement, to learn about the cognitive results of sensory deprivation, and to explore human capacity for model compensation or the substitution of one sensory modality for another. *Bender Gestalt Test* has been applied by many investigators showing that deaf children produced more errors than hearing children of same age and intelligence. Schiff and Dytell (1971) reported that deaf and hearing subjects performed in a similar way on a pattern of tactual perception tests and concluded that acoustic stage of information does not necessarily have to precede cross-modal identification. Researches were carried out in the area of perceptual-motor functions in order to understand whether the presentation of material to deaf children in a variety of modalities would enhance or hinder learning. Researches were also aimed at resolving some of the educational controversies about cross-modal teaching techniques.

PERSONALITY CHARACTERISTICS AND SOCIAL DEVELOPMENT OF THE DEAF

In childhood, the deaf are often noted to be emotionally withdrawn or to show frequent compulsive traits or rituals performed repeatedly which may be mistaken for retardation or even autism. However, this type of behaviour changes substantially when the hearing problem is somewhat solved with the use of hearing aids or visual language. Some socially unacceptable behaviour problems are also noticed among the deaf, for instance, they may make irritating noises while putting down objects or rattling of newspapers and the like, as they themselves are unaware of this problem because of not being able to experience any such irritating noises.

Older deaf people are often characterised as self-centered, rigid and impulsive and lack of empathy with other people or lack of understanding of the effects of their behaviour on others. This, however, can best be understood in the context of their restricted scope of communication with others. Sometimes the deaf are noted to be suspicious by nature as they constantly express their doubt about the happenings in the environment and attempt to verify frequently the things as they understood, are really the same as have been understood by others. Often they even want to rely on their own perceptions and judgements which might lead to agitation followed by suspicion. The deaf is often identified to be academically retarded. The deaf child's motivation to learn is related to many personal factors associated with his hearing problem itself. For instance, his dependency on others and his tendency to withdraw from contacts may affect his curiosity and interest in learning as also his willingness to put in adequate effort for learning.

Deaf children are reported to be significantly less happy, less creative or imaginative, and reported to have less compliant, less pride in mastery and less enjoyment in the interaction with their mothers. Deaf children with better communicative skills, however, were comparable to the hearing children in respect of these traits (Schlesinger and Meadow, 1972). Deaf children whose language development is retarded, will have fewer opportunities for social interaction both within and outside the family. The response of the other members of the family to one's actions and reactions, and the correct interpretations of the response is necessary for accommodating a child successfully to a particular situation.

The handicapped children exhibit developmental delays in their role taking abilities, resulting in inappropriate responses to others; for example, their awakward bids for gaining friendship through aggressive behaviour may only annoy prospective playmates. The deaf without or little language must rely more on facial and gestural impressions for interpreting other's responses. They have difficulties is understanding subtle affective cues. Development of imaginary play requiring role taking, is also restricted. In play situations the interaction between two hearing children are better organized; the deaf, however, have greater difficulty in progressing from competition to cooperation in a task basically requiring co-operation. In peer group interaction the hearing children were found to be more sociable and had more social interaction than the deaf in terms of verbal interaction and mutual attention. The deaf exhibited more social interactions of an expressive kind—more physical contact, approval and negative interactions (Meadow, 1980).

Self-Concept

Social development and self-concept go hand in hand. Deaf children rated themselves much more positively on a number of schedules than the hearing children. The deaf children with deaf parents (all of whom had used manual communication with the children from an early age) showed significantly higher, more positive scores on self-image than in deaf children of hearing parents. Meadow (1980) also found self-image scores were positively related with family climate, school-achievement scores and communication scores; this relation being more significant for those children whose deaf parents were particularly active in the deaf community. The parents' interaction with other deaf persons may have had a direct positive effect on their children.

Deaf children have more personality adjustment problems as found assessing with personality questionnaires. However, there is no 'deaf personality type' and there is much diversity among the deaf which is related to levels of education, communication and personal experiences. Individuals or institutions affect the development of auditory contact of the deaf with those around him. Parents of deaf child, other members of the family, teachers, and other people in the community all influence the social development of the deaf. Families of deaf where both parents have normal hearing, have differential impact from those families where one or both parents are deaf. It has been estimated that about 90 per cent of the deaf children are born to hearing parents.

Deaf children are found to have lower scores on *Vineland social maturity Scale*. The deaf children of deaf parents were rated significantly higher than the deaf children of hearing parents in a residential school on dimensions of maturity, independence and ability to take responsibility (Meadow, 1980) As observed by Meadow, parents' attitudes and child-rearing practices may by mostly responsible for the slow development in social maturity of deaf children; but in their residential living there would be absence of family contact and the close supervision would also be conspicuously absent which might lead to a few opportunities for independence. The protectiveness some families provide for their deaf children, probably contributes to their retarded social development. Gordon (1959) studied the relationship between maternal attitudes towards independence to deaf children's social maturity; and it was concluded that it is not maternal attitude toward the handicap in particular, but rather her attitude toward the children in general. Parents of deaf children are sometimes made more anxious by teachers who try to encourage them to work for the children to achieve more. The siblings of deaf children were reported to have experienced more jealousy than those of other children.

A Report of the Seminar on Artistic Creativity of the Deaf : Some Psychological Assessment

The present author administered a number of psychological tests on a group of hearing impaired adults who participated in a workshop on the 'Artistic Creativity of the Deaf' organised by the Prabha Institute of Delhi in collaboration with the UNESCO, Paris, from December 1 to 21, 1981. A National Seminar was also organised on this occasion on the same theme topic. The workshop started on 1st December while the seminar started on the 17th December alongside the workshop. The workshop involved teaching the deaf different creative arts including painting, 'tie and dye', batik, collage, sculpture, ceramic, photography and performing art. Professor A.K. Jalaluddin was the Director of this seminar, while the present author was the seminar co-director. The speakers in the seminar included teachers from the special schools for the hearing impaired, psychologists, educationists, ENT specialists, linguists, administrators of Art school and parents from different parts of the country, such as Delhi, Bombay, Poona, Hyderabad and Calcutta. The seminarists mainly discussed feasibility of exploring creativity among the deaf. A few speakers emphasized to the fact that creativity is present among the hearing impaired as well as the able-bodied hearing persons. Creativity is an integral part of every person including the handicapped. It is a quality of human being who has potentials for growth and self actualization. This self-actualizing force works within the individual ever seeking fulfilment of inner urge and aspirations.

However, congenial environment needs to be created for identification and nurturance of particular form of creative expression of an individual. Just as it is important to detect impaired hearing, if any, in a child, so is also necssary to identify the creative potential of an individual in a particular form, at an early age. Exploration of this creative potentiality has been suggested to be followed by providing with proper opportunity. Creative expression would then not only increase the probability of a person to be profitably economically adjusted into the society in the long run, but it would also give him a sense of fulfilment which is liable to enhance his self-image and dignity. The agencies which have a vital role in helping the child in unearthing his creative possibilities are home, school, Government and community at large. A need was felt to have many more training centres for creative training for the deaf in different parts of the country, including the rural areas. It was also suggested that the appropriate authorities may be approached to provide the work materials such as art paper, paint etc., at a subsidised rate to the handicapped, along with the provision of procreation of many more art collections at the libraries and making available to them the library facilities.

There was a unique opportunity for the seminarists and the workshop participants to be able to view a Video programme of Ms. Zarin Choudhary's You light up my life, which was a mime show, action play put up by the deaf, presented by the *Oral School for Deaf Children* from Calcutta.

Apart from artistic creativity of the deaf, some other topics were also discussed by the speakers and participants in the seminar. These included, need for the deaf, different forms of communication, planning, management, measurement aspects of creativity, development of personality, among others.

Result of Pscychological Testing

The participants in the workshop included 35 hearing impaired persons including boys and girls (majority of them belonged to age group of 15-25) who also came from different parts of the country. In addition, some instructors and teachers were all the time present with the workshop participants. A number of students from the Department of Psychology, Delhi University, assisted the present author (Sen, A. 1981) by administering different psychological tests which involved *reasoning ability*, *non-verbal creativity*, *personality*, *interest*, and extent of deprivation, and a host of psychological information was collected.

The aim of the testing programme was basically to determine the positive assets of the handicapped group. It was decided to determine the reasoning ability of the deaf as also their creativity and interest pattern and some personality characteristics. Determination of the level of deprivation and socio-economic status were also included in the testing programme.

Rationale for Selection of Tests

Though it is generally recognised that the deaf need not be dumb, the problem of verbal communication with them cannot be overlooked. In order to overcome this problem the choice of the psychological tests was made cautiously so that the need for their verbal expression was minimised, and minimum verbal communication was needed in administering the tests. With these considerations, to determine the abstract reasoning ability (which is a good index of level of intelligence) a non-verbal reasoning ability test, *Raven's Progressive Matrices* (RPM) (1947) was selected. This test measures abstract reasoning ability of the subjects and it is acclaimed to be fairly culture-free and reliable.

Similarly, in order to tap their creativity, an Indian adaptation of the *Torrance Creativity test* was employed. This test has two parts *viz.*, verbal creativity and non-verbal creativity and it has been adapted in the Indian context by Baqer Mehdi. Only the non-verbal creativity part of the test was administered to the participants. Interest pattern is an important consideration in addition to the cognitive ability, for success in any kind of vocation; for this aspect, a non-verbal test was used, developed by Chatterjee for Indian population (*Chatterjee's non-verbal preference scale*).

To assess the personality characteristics, a projective technique, Rorschach Inkblot Test was selected. Administration of this test, however, was not so easy with the deaf because of communication difficulty. However, there is some evidence in the literature that this test had been in fact, used earlier with the deaf sample as well; a similar venture was also made with the present group of subjects.

Socio-economic status of the participants was also established by administering the socio-economic status scale, developed by Jalota and Kapoor for urban population. In addition to this, the level of deprivation was also aimed to be determined by applying an Indian test, developed by Misra and Tripathi (1976), called '*Prolonged Deprivation*' *Scale*.

In administering all these tests the help of the instructors and teachers of the deaf was liberally sought for the purpose of communicating with the deaf for giving instructions, etc.

Sample

A total of 38 subjects participated in this study who were within the age range of 12 years to 42 years. However, majority of them was in the age range of 14-25 years; there were 25 male and 13 female participants. All the tests could not be administered to each subject either because of their non-availability, or lack of their time and because of some practical difficulty in administering a test to some subjects, particularly, Rorschach Inkblot Test. Because of this reason, the exact sample size kept on varying in different testing sessions.

Results

(*a*) *Abstract reasoning ability test* (as measured by RPM)—The test could be applied on 35 (23 males + 12 females) subjects. The maximum possible score is 60 in this test; the mean score obtained by this group was 35.23, the range was between 9 and 51. In terms of percentile rank, PR, the mean percentile rank was 39, the range being 5th to 90th percentile. This shows that the group was very much heterogenous in nature, some of them were very low in their reasoning ability, while a few others were quite high. The modal value of PR (for 8 subjects) was found to 37.5 percentile which indicates that in a sample of 100 people randomly drawn from normal population, about 62 persons would be above them in reasoning ability.

(*b*) *Non-Verbal Test of Creative Thinking*—This test was administered on 36 subjects (24 males + 12 females). On the test of creative thinking, the subjects were assessed on three factors, *viz.*, Elaboration (El.), Originality (Org.) and the Title (T). The items scored for elaboration and originality consisted of the pictures which the subjects were required to draw. Elaboration was represented by the person's ability to add pertinent details (more ideas) to the minimum and primary response to the stimulus figure. Originality referred to the uncommonness of a given response. The Title given to each picture was also scored.

Following were the mean Elaboration, Originality and Title scores for the group :—

	Mean Score	*Range of Scores*
Elaboration	60.90	28—107
Originality	55.48	29— 85
Title	6.61	0— 49

Very low mean score was obtained on the Title, because of their inability to express themselves fully. It was found that these subjects received special education in special schools for the deaf; nevertheless, their handicap restricted them to a limited vocabulary. One of them obtained a score as high as '49' (Sex—Male; Age—16; RPM Score—11; Percentile Rank—Below 5th) but the rest of the scores ranged between 0-17).

Since all the students participating in this workshop had been selected on the basis of their interest and talent in some form of creative art, it was assumed that they should score high on the test of creativity. But this test involved mainly picture drawing as the source of measuring creativity. Hence comparisons were made within the group to determine whether the children efficient with paints and brushes obtained higher scores as compared to their peer group specializing in some other form of art, for example, 'Batik', 'Tie and Dye' or 'Clay modelling'. It was found that more pertinent ideas and details were added to the picture by those who were 'deft' with their 'brushes', as compared to those who did Clay modelling, Batik, or 'Tie and Dye'. These artists also gave more of uncommon and original responses as compared to the other groups.

Following Table (based on 23 subjects' responses) shows the results of non-verbal creativity test :—

		Mean Scores			
		Elaboration	*Originality*	*Title*	*Remark*
Gr. I (N=10)	(those who were efficient with brushes)	79.1	65.5	6.6	
Gr. II (N=6)	(those who were learning the job of a photographer or fitter (at MTPCD* at AIFD) or were working with clay at the workshop).	43.0	47.17	11.0	'Title Score' is inflated because of presence of one high score of '49'. Without this high score, the mean is '3.0'.
Gr. III (N=7)	(those who were doing Batik or Tie and Dye)	50.28	48.28	2.86	
(N=23)	(the combined mean scores)	60.9	55.48	6.61	

* Multiple Training Programme for Communication with Deaf, All India Federation for the Deaf.

(c) *Interest Pattern as Determined by Chatterjee's Non-Verbal Preference Schedule*—The interest patterns of the participants of the workshop were analysed using the 'Chatterjee's non-verbal preference record' form. Data could be collected on 23 subjects only. This is a non-verbal test which measures interest in ten broad areas, *viz.*, (1) Fine Arts, (2) Literary work, (3) Scientific, (4) Agricultural, (5) Technical (Mechanical), (6) Crafts, (7) Outdoors, (8) Sports, (9) Medical, and (10) Household work.

The Stanine grades (SG) were developed for this particular group. An inspection of the SG values showed that all the individuals had a clearly defined interest in one or more areas. The details are as follows:

(*i*) Crafts—Two persons, both males had above average interest (Stanine grade of 8 for both) and one had high interest (SG. 9).

(*ii*) Sports—Four persons, all males had above average interest (SG. 7,7,8, & 8) and one had high interest (SG. 9).

(*iii*) Literary work—Two had above average interest (SG. 7 & 8) and two had high interest (SG. 9 for both). Two were males and two were females.

(*iv*) Household work—Four of them (three males and one female) had above average interest (SG. 8 for all) and one had high interest (SG. 9).

(*v*) Outdoors—Three of them, all male, and above average interest (SG. 7,7, & 8) and one had high interest (SG. 9).

(*vi*) Medical—Two of them, both male had above average interest (7 & 8) and two had high interest (SG. 9 for both).

(*vii*) Fine Arts—Four (two males and two females) had above average interest (SG. 7,8,7, & 8), and one had high interest (SG. 9).

(*viii*) Technical—Three males showed above average interest (SG. 7,8, & 8) and one had high interest (SG. 9).

(*xi*) Agriculture—Two had above average interest (SG. 7 & 8) and two had high interest (SG. 9 for both).

(*x*) Scientific—There were two males who showed above average interest (SG. 7 & 8) and one had high interest (SG. 9).

(*d*) *Personality* : Rorschach Inkblot Test (Klopfer and Kelley, 1946) was used to assess the personality of the participants of this workshop. This test could be administered only on 11 subjects. No definite generalizations could be made because of their inability to communicate and to express their ideas and feelings fully. It was found that most of them gave an exaggerated amount of animal responses, detailed responses and pathognomic responses. An excess of animal responses indicates: (1) an unconscious affinity with the animal, (2) inferiority, (3) considering themselves as different from human beings and (4) an inadequacy to deal with problems.

The presence of many detailed responses gives rise to the speculation that the person is trying to find an escape from the real problems of life by courting petty interests.

Colour and movement responses were singularly lacking perhaps due to the difficulty in communication.

(*e*) *Prolonged Deprivation Scale* : This test was administered on 28 subjects. In the Indian context the criteria of deprivation have been stipulated by Misra and Tripathi (1976) and they constructed a 'Prolonged Deprivation Scale' which considered 15 environmental factors: (1) residential accommodation, (2) physical environment of the home, (3) economic status, (4) food, (5) clothing, (6) educational experiences, (7) rearing experiences, (8) significant childhood experiences, (9) parental characteristics, (10) interaction with parents, (11) motivational experiences, (12) emotional experiences, (13) recreational experiences, (14) religious experiences, and (15) miscellaneous quasi-cultural experiences.

Descriptive statistics of the group on this PD Scale are furnished in the table on succeeding page.

In terms of percentile equivalent of the total test scores, the range was from below Ist percentile to 92nd percentile. However, the mean PDS was equivalent to 50th percentile.

(*f*) *Socio-Economic Status Scale*—This scale could be administered on all the Ss (N=28) who took the P.D. Scale. After analysing the obtained scores on the socio-economic scale, the categories were determined for all the subjects on the basis of the norm provided for this test. Different social strata on this scale are decided upon after considering different weightage on factors, such as parental occupation, parental

	FACTORS															
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*Total*
Mean	11.03	14.17	18.14	11.78	13.00	28.00	14.96	23.17	22.54	22.07	21.96	20.25	7.61	7.14	25.84	258.51
S.D.	3.84	4.60	6.98	5.78	1.84	4.55	1.56	6.75	8.87	4.72	6.38	8.69	2.93	2.65	7.26	37.18
Range	6-19	9-21	10-28	7-17	8-19	15-31	14-31	17-30	14-31	14-30	14-36	7-38	3-14	4-11	15-41	68-334

1. Residential Accommodation
2. Physical Environment
3. Economic Status
4. Food
5. Clothing
6. Educational Experiences
7. Rearing Experiences
8. Significant Childhood Experiences
9. Parental Characteristics
10. Interaction with Parents
11. Motivational Experiences
12. Emotional Experiences
13. Recreational Experiences
14. Religious Experiences
15. Miscellaneous Organisation Experiences

education and education of siblings, economic index (determined on the basis of income, house type, material possession etc)., cultural level of the family (as judged by expenditure on newspaper, magazine and material possessions), psychological indicators, such as level of aspiration, concept of social prestige and belief in caste, determining the tendency toward conservatism or progressivism. The total possible score on SES scale is 75. The analysis revealed that 13 subjects belonged to 'upper middle strata' (score equivalent is 46-6.) while three belonged to 'upper lower strata' (score equivalent is 29-45) and the rest (12 subjects) belonged to lower middle strata (score equivalent is 12 to 28). Thus, more than 50 per cent of the participants belonged to lower social category rather than the upper category.

Conclusion : As pointed out earlier, the group is quite heterogeneous in terms of their different capabilities, status and level of deprivation. In spite of their handicap, some of them were quite promising and were capable of improving further. Their reasoning ability coupled with creative talent and interests in specific areas certainly call for further development under appropriate training opportunities.

EDUCATION OF THE DEAF

Hearing is a natural phenomenon whereas speech has to be acquired. Language and speech are the two main avenues used by human beings for communication purposes. In this context the problems of the individuals with severe auditory deficits become imperative. A child hears a word innumerable times before he accumulates it and produces it. Since the deaf cannot hear others. he has no auditory "model" for his own speech responses. As such, a child born deaf, essentially grows up also as a "mute", because of the fact that he has never heard a word or sound for accumulation and subsequent reproduction. This results into his inability to speak, though there is usually no organic conditions accompanying deafness which could prevent the development of speech. Thus the affected individual experiences difficulty in learning the language of the society in which he lives.

The word or name of an object refers to the whole and its symbolization. In hearing persons the word penetrates the experience and helps to integrate the experience into one whole. In the deaf child this is more difficult, as the symbol does not directly integrate with the experience. Therefore, the development of symbolisation and symbol consciousness in deaf children do not develop as early as in hearing children. The deaf child's attention is pulled away from the direct experience because he has to watch the face of the person who wants to give him the word for the experience.

Normal hearing children respond better to words which are more operative in their quality and more frequently used in their experiences. The frequency does not only influence the naming process, but it also helps in the simultaneous synthesis. Therefore, it is reasonable to assume that it is not only the amount of sensory information that facilitates the formation of a link between the symbol and its object, but also the ability of the person to integrate the several sensory modalities into a single experience.

Loewe (1981) has summarised some symptoms of a disturbed sensory integration indicating that there is some difficulty experienced in making an association between experience and symbol in its different forms spoken, written etc. This may lead to a variety of difficulties, such as,

> The symbol may remain without any meaning and the child may repeat a word or a question without having understood its meaning (echolalia) ; or
>
> the general meaning of a word may be hardly understood, meaning may be attached to one concrete situation; or learnt words may easily be forgotten ; and
>
> a learnt word may not be easily retrieved. In a naming task the child may prefer making a sign or gesture rather than saying the word as such.

There is the difficulty in making association of the various modalities of a word. Graphemes do not integrate with phonemes; the written word does not integrate with the spoken word. These problems are not related with the problems in the basic reading skills or problems in visual perception.

For many years educators of the deaf have tried to develop satisfactory ways and means to teach speech to deaf children. Since World War II audiologists, speech pathologists and other concerned scientists showed their ever-increasing awareness of the problem and consequent attempt for its solution. Linguists, psychologists and psycholinguists have applied new approaches to the study of the language of the deaf (See Cruickshank, 1971).

Education depends essentially upon the use of verbal symbols and in this respect the deaf becomes handicapped in the understanding, fixation and use of verbal symbols. The difficulties that the deaf experiences in linguistic and cognitive spheres are reflected in their social and psychological development as well. Because of his linguistic incompetence, he needs compensatory and comprehensive training for a fuller realization of his endowments—including intellectual, scholastic and social. In the absence of such training he is liable to be totally non-verbal as well as non-vocal.

The experiential situation of such a child is fragmentary in nature. The child is less embodied into the situation in which he lives. He will be easily distracted by environmental stimuli. His behaviour will be more or less chaotic and incoherent.

However, the sensory experiences acquired by human beings are never fragmentary in nature, they constitute a sensori-motor whole. The whole spectrum of sensory modalities has its part in experiencing an object. The knowledge of an external object includes touching, smelling, manipulating, seeing and hearing it. Abilities which require integration of kinaesthetic experience like grasping small objects or modelling with clay, do not develop easily in these children. There is a kind of sensory dyspraxia which needs to be distinguished from motor dyspraxia.

The deaf are not a homogeneous group. Some may have great difficulties in articulating words and sentences fluently although they have normal hearing for pure tones. The reason for their poor speech is associated with different factors involving neurological as well as psychological aspects. Lack of hearing may manifest itself in a number of ways. The child with a hearing impairment has often been characterised as being indifferent, slow and inattentive. He may also exhibit some behaviour problems such as cupping of the hand to the ear and asking others to speak louder, or himself speaking louder in a group. Since the hearing impaired person does not hear all that are being said around, he may become suspicious and sensitive. Sometimes it is rather difficult for him to overcome his feelings of inadequacy, and his disturbed emotions may become intensified and he may become reluctant in developing social relationships. In addition to this, if his speech is also not of normal quality, he tends to become less communicative. These are, however, not symptoms, *per se*, of impaired hearing. But the conditions generated by the problem of impaired hearing bring about such behaviour abnormalities affecting social relations and personality development right from the pre-school years.

Development of language and reading skill is rather slow in the hearing impaired child not only because of apraxia but also because of the factor of level of integration of sensory modalities, which contributes to the development of language. Deaf children who have difficulties with the simultaneous integration of sensory experiences have also difficulties with the development of symbolisation. In the context of oral communication and learning disorders in deaf children, motor activity plays an important role. There is a close relationship between fine motor control and learning to speak and read speech. For the development of speech, the fine motoric component is essential, for learning to speak well, involves a complicated coordination of tongue, jaw, and lip movements. If auditory feedback is missing (often the case with profoundly deaf children), these children have to rely for the needed feedback process mainly on the fine kinaesthetic senses. Disturbances of this sense will influence speech and speech reading in a negative way.

In the formative period children learn speech and language both for reception and expression through hearing. The hearing handicapped children cannot hear, and are not able to receive impression of spoken language and consequently they cannot acquire speech as their normal hearing peers. The deaf children can see, they can feel, they may also possess residual hearing of different quantities. Multisensory approach is, therefore, needed to be adopted for the education of the deaf. The senses of touch, sight and hearing are to be trained for teaching speech and speech reading.

Sense Training : The ability to perceive similarities and differences is the first step afforded to a deaf child using sense training materials. Formerly, sense training works were confined to the training of the senses of touch, kinaesthesis and sight. Auditory training is being presently included in the sense training work, as the sense of hearing is now being utilised along with sight, touch and kinesthetic sense for the development of speech and speech reading. Sense training helps in development of the processes of observation, imitation, attention and concentration. These in turn may be helpful in speech teaching and lip-reading or speech reading.

SPECIAL EDUCATIONAL PROCEDURES FOR THE DEAF

Teaching-learning processes for the deaf are by no means exhilerating by themselves. Programmes designed to help them in imparting education calls for inclusion of new techniques and insights. The deaf perceive language primarily through visual means, such as lip reading, sign language, informal gestures, finger spelling as well as through other channels such as auditory and tactual systems. However, visual feedback is not a perfect substitute for normal hearing. The educators of the deaf have experienced that lip movements are often ambiguous and usually about not more than 40 per cent of them can be perecisely identified. It is, therefore, necessary to supplement speech reading by other sensory informations that can be derived from residual hearing (through the use of good hearing aids) as also from tactile and kinaesthetic senses.

The *auditory approach* would involve use of electronic aids such as individual hearing aid, individual speech trainer (either battery or main operated) used in class work for one student by the teacher, the group hearing-aid (used for group teaching) and the loop induction system which has an amplifier, a teacher's microphone and a wire around the room, which creates a magnetic field and is used in conjunction with the individual child's bodyworn aid. In *Kinaesthetic approach*, the kinaesthetic sense is developed by the child himself when he learns to get the feel of certain articulatory movements of the organs of speech. For instance, if a child can distinguish the fragments of speech sounds, he can be trained by a experienced teacher to associate these fragments with the visual-kinaesthetic-rhythmic pattern of the word or sentence. It is important that the deaf child finds an outlet for expression by developing his individual rhythm and learning to move various parts of his body. The *tactile and vibratory* sense is also made use of by the teachers of the deaf.

Scientists have brought out an analogy between the skin and the ear. Audiologists and educators of the deaf are becoming increasingly aware of the fact that even the profoundly deaf can perceive amplified speech through the vibrotactile receptors in their external and middle ears (See Vasanta, 1981). This suggests that vibratory training may yield fruitful results, if stimulus configuration and tactile memory are given due consideration in the educational programme of the deaf.

Thus with co-ordinated, multisensory feedback, the deaf can be greatly assisted in speech learning. Following Zukov's principle of communication (Moores, 1972), showing language as the hub of a wheel with seven spokes (representing speech, environmental observation, reading, writing, daily life activities, measuring and counting, and arts and crafts) radiating out to the circumference, Moores (1978) observed that language is considered to be the most important dimension of the first stage of education. After analysing available evidence, Moores concluded that the deaf do not lack language abilities; and therefore, they cannot be considered alinguistic as such. Moores (1978) also had identified four basic methods of imparting education to the deaf as existing in the United States and these are:

(*a*) *Oral method*: In this method children receive input through speech reading and amplification of speech sound; and they express through speech; gestures and signs are not encouraged. This is, in fact, the visual approach wherein the child is encouraged to use his eyes to understand spoken language. The Society for Oral Education of the Deaf in Calcutta started the Oral School for deaf children in 1964 with the basic objective of preserving and building up the resources of normality which remain unaffected by deafness.

(*b*) *Auditory method*: It is basically unisensory in nature; it endeavours to develop listening skills in the children. Though particularly developed for children with moderate hearing loss, attempts were also made for use with profoundly deaf as well. The basic idea is to enable the child to make use of whatever residual hearing he still possesses.

(*c*) *Rochester method*: It is a combination of the oral method along with finger spelling; reading and writing are given a great deal of emphasis.

(*d*) *Simultaneous method*: This is a combination of the oral method along with signs and finger spelling.

Teachers can appreciably help the deaf child in a classroom situation by, (*i*) making certain that he is looking in the direction of the child when given the class instructions or directions, (*ii*) arranging the seating positions or re-seating the child so that he will be close to the teacher and readily able to see the face of the teacher when he is speaking, and (*iii*) speaking loudly and slowly, when an activity is anticipated involving a specific response from the child suspected to have hearing loss.

The basis of individual training is the assessment process by the use of fairly simple and straight forward developmental assessment charts which list the crucial skills and behaviours. Such charts should indicate the stage the child has reached in the key areas of his development; and this would help in determining a developmental programme which would set specific goals and objectives. A detailed assessment of the many skills and processes involved in language, is necessary. These include receptive as well as productive language; non-verbal communication, including manual system of communication, such as sign languages and 'visual' languages. Assessment would be needed in areas concerned with physical development, gross and fine motor skills, communication including the ability to understand and use speech and language as well as non-verbal systems of communication, social and emotional development, self-care skills, the development of play and symbolic ability. The assessment of skills and developmental levels, can then lead directly to the formulation of programme for development which may be geared to the needs of the individual child. The aim of education is 'to help all children to fulfil their potential' and 'adjustment to society'.

Teachers should learn to work concertedly with the child's family and to make them involved in depth and detail for the total development of the child. The experiences world over, in fact, do suggest that a handicapped child can learn more meaningfully when his family is actively involved, than when the teaching is carried out by teachers alone. It is thus necessary to ensure involvement of families in teaching the deaf, so that all are working essentially towards the same goals. The family should continue to play their important role in helping the child to adjust himself to school and to other social situations. While helping the child in solving new problems, they should also help him in becoming progressively self-reliant. The parents also must be realistic in their aspiration about the future of the child.

The deaf is not basically different in his innate psychological potentialities from the hearing child. However, it is essential for the parents and teachers of the deaf to have an insight in understanding the psychological factors that are intimately related with his communication skill. Congenial situations should be created so as to foster his orientation and a feeling of security in his environment.

As the auditory distraction is minimum for the deaf, his attention can perhaps be effectively diverted in learning rhythm and dance with the objective of helping him in developing control and coordination. He may be taught to have a physical and emotional balance in order that his sense of rhythm could be extended and he feels confident in communication with others. An organised dance programme would stimulate emotional and physical well being, increasing his confidence to communicate. It would help him in making social contacts, and it would also encourage recognition of others and group participation. There are at least two art forms which the deaf can fully appreciate, and these are pictorial art (including films) and pantomime. The deaf, if trained from the very childhood, would develop aesthetic experiences. Dance can also lead to highly beneficial changes in the intellectual, physical, emotional and social adjustment.

Movement is the most basic and most universally understood form of communication. Even before the human baby learns to speak, he communicates his needs by movements and expresses himself. Although each individual has his own rate of development and learning, all of us pass through similar developmental patterns. These patterns include movements of hands, gripping, grasping, picking, kicking, rocking, twisting, walking, running, and the like. This pattern is also true for the handicapped, the deaf. Movement and rhythm have their all pervasive nature in different life situations.

Individuals vary in their rhythmic pattern, and dance is movement in rhythm which can be seen or felt as emotional expressions. The highest refinement of movements comes in the form of accomplished performance of a trained dancer. Recourse to dance or movement and rhythm would provide for an outlet of expression for the deaf.

Teaching of mime, mimicry or pantomime would also increase channel of communication for the deaf. Some of them may even excel in this performing art so that not only they get recognition of others but also economic opportunities may become available for them. Learning of photography, interior decoration are some other areas where the deaf may experience success and profitably use their potentialities in specific areas.

The self image of the deaf needs to be developed. It may be possible to encourage them in expressing their ideas through painting, drawing, clay modelling, sculpture, etc. Doris W. Naiman (1979)* reported a photography project with children aged from 9 though 16 years, conducted by the New York University's Deafness Research Institute and Training Centre.

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* *Source* : "Reading in Deaf Education, Special Learning Corporation," Guilford, Connecticut. 06437, 1979.

The children belonged to four classes at New York City's public School JHS 47 for the deaf. The project included children in regular classes and children who were placed in special classes because of their severe maladaptive behaviour patterns including hyperactivity, unresponsiveness and withdrawal from interaction which interfered with their learning in regular classes for the deaf.

The photography project involving individual students with camera provided a unique approach for the participants to express themselves and communicate in a non-verbal and not necessarily academic way and to experience success.

The detail of the procedure adopted, as reported were:

> Each camera was shared by two children. They took turns using the cameras at various times during the school day designated by the teacher. Each child had use of the camera out of school on alternate weekdays and weekends. Film allotment was two rolls per child, for a total of 16 exposures per week. Both black and white and colour films were provided, and flash cubes were available as and when needed
>
> Photographic activities took place daily. Children received individual instruction on how to take and develop photographs. With the help of a Polaroid camera it was made possible for the children to develop their own pictures at once. During the first week all cameras remained on the school premises and picture taking was confined to the general school area. For the remaining three weeks, the children were allowed to take the cameras outside the school as well.
>
> The children were allowed to photograph whatever they wanted. Teachers encouraged the children to show their photographs to other children, to take their photographs home, and to tell about their photographs using all modes of communication, including talking, signing, writing and pantomiming. Teachers suggested special activities such as making individual booklets of photographs, mounting photographs, writing stories about them, and arranging an exhibit for parents and students of other classes.

The extent to which each child achieved the project objectives was assessed by means of the following evaluation techniques:

(*i*) Teachers' report forms were filled out daily by the teacher to record the child's ability to use the camera, number of photographs taken in and out of school, frequency in showing photographs, and efforts to describe pictures and experiences.

(*ii*) Questionnaires for teachers, educational assistants, and parents were filled out at the conclusion of the project to provide information from individuals closely involved with the children regarding their perception of the children's interpersonal communication as related to the photography experience.

(*iii*) Structured interviews with the school's principal, assistant principal, and media specialist were conducted in the two weeks following completion of the project to provide information from observers less closely involved regarding their perceptions of the effectiveness of the photography experience.

Out of 20 children involved in the project, 19 achieved all of the specific behavioral objectives set out at the beginning. All the children learned to operate the camera; 16 children learned in one day, four in two days. Most of the children took as many photographs as their film allotment allowed.

All the children regularly showed their photographs to classmates and teachers. Of the 12 mothers interviewed, eight indicated that taking photographs at home and showing pictures taken at school increased their communication with their child.

Teachers ratings indicated that 18 children showed a significant or outstanding increase in their interaction with peers, expression of feelings, and communication of ideas. These children used varying combinations of speech, manual communication, writing and pantomime.

In addition, 17 children regularly communicated about their finished photographs either on their own initiative or in response to questioning. The other children communicated about their pictures only with much encouragement from the teacher, but, in spite of this reluctance, one of the three still showed a significant increase in interaction and expression of feelings according to her teacher's rating.

The most significant aspect of this project was that the teachers and parents reported an enhancement in self-esteem in most of the children. Skill developed in handling of photographic equipments and techniques helped in giving them a sense of competency. Many children had a chance to experience success for the first time at a task. The children were happy with their new role as photographers and even happier in demonstrating this new role to others in the peer group. This led to generating in them more self-confidence in social situations and developing increasingly greater ability to approach unfamiliar situations.

Moreover the children's freedom to decide what photographs they wanted to take and how they wanted to take them played an important part in adding to their feelings of self confidence, self image and competence. They had an opportunity to take independent decision, to choose and to create something. All these processes help in building confidence in the handicapped children in taking independent action.

The children also developed increased interpersonal communication and they enjoyed writing about their experiences which again evinced some progress in written language and in reading among the students of all classes.

It is true that such projects cannot be so easily taken up in the Indian context. However, a growing mind can be stimulated in a number of ways. The deaf will benefit from manipulation of those materials that would involve eye-hand activities, so that these important body functions work 'in gear' with each other. All children love to make things; but the handicapped very often finds himself that there are many things he cannot do; and therefore, he experiences a sense of defeat, even before he has started. However, he can make something with a brush and some paints, with a lump of clay or out of a piece of wood. In the beginning, it might be an unsophisticated or even unrecognizable object, but it is a *tangible product he has* *made himself.* A small success would inspire him to have a bigger success ; and nothing succeeds like success. Encouragement to express oneself also leads to an *improvement in communication skills* and an *accentuation of his ability* to make decisions for oneself. For instance, one shows preference for one particular medium rather than another, subject matter, shape and size of the paper, colour arrangement, designs and techniques. Creative expressions also help one in the development of his potentials for independent living.

The logical way to start seems to identify first the skills commonly taught in arts and crafts programmes in schools, and how they could be best adapted for the deaf. In working with him, success is more often experienced in the *doing* and in the *making* of the things. It pays to remember that everyone of any age group likes to be appreciated; therefore, when the work of the deaf is displayed, it brings inspiration to the deaf. This gesture of appreciation speaks louder than any word. A handicapped child is particularly afraid of failure; criticism will lead him to more frustration. It is desirable that one stretches one's own imagination to see things in what the child is making. The ability to create is a slowly emerging process that needs constant encouragement.

The central activity in creative self-expression of the deaf in visual arts (such as painting, drawing, clay modelling, sculpture, collage, print-making and the like) improves independent living skills, communication skills, personal adjustments and socialization. There is ample scope of studying the potentials of the deaf in the form of creative art expression for all round development of the deaf. Mr. Satish Gujral is one of the glaring examples of a talented artist whose deafness did not deter him to earn the fame.

Appropriate stimulation and encouraging environment are needed for the flourishing of creativity in an individual. It is of man's nature to have curiosity, to have an urge to know and to understand. Curiosity and experimentations are natural and rewarding to human being. A positive, accepting and stimulating environment enhances natural growth of creativity, while on the other hand, a critical and derogatory environment may curb it.

Creativity exists in everyone; however, optimal environmental conditions are needed for its appropriate nurturance and blooming. All children, handicapped or not, grow and develop both physically and mentally. So far as the sensory handicapped, the deaf is concerned, his parents and society at large must think constructively about his future well-being and adjustment into the society. The deaf needs all possible help, patience, ingenuity and a genuine concern for him by all around him, in order to help him in realising his potentials. Whatever may be the magnitude of his potentials, left to himself, he cannot do much. The creative self expression of the deaf would enhance his self-concept and would help in developing his self-image and social adjustment. Many of the handicapped can express their creative ideas through painting, clay modelling, sculptures, pantomime and other media which are conducive to the improvement of self-concept as self-sufficient and independent persons. This also helps in the inter-personal and social adjustment as self-concept and social development go hand in hand.

The early training the deaf receives in his home or in special schools will determine to what extent he is going to become a constructive member of his community, and at least partially self-supportive. There is a great need to develop manual training for the deaf, starting while they are young. For young and old alike, *finger painting* is the most freeing form of art expression and almost everyone can do it. It is one of the easiest and earliest ways to train the hand to follow the eye. Finger painting is good for ego of a child and he simply cannot fail at it. Even the most random uncontrolled smearing will produce some sort of a colourful design. *Vegetable printing* is also one of many creative crafts that can involve even the whole family; modelling with clay or plasticine are some further examples. Scribbling is not just waste of time, it would invovle broad arm movements. Eventually the child will begin trying to make definite shapes; he will begin to add lines. As a child develops more and more control of the medium he works with, he discovers that he can use the "pictures" he makes, as a means of communication.

In working with clay a child learns to use simple tools and to use his imagination in decorating or creating texture on an object he has made. He also learns that if he has made a mistake or he is not satisfied with what he has made, he can always rectify it. Because of the unique property of clay, he can mash the whole thing to start afresh. The simple skills and awareness of how to work with clay and other dimensional materials give a good solid base for the child. In clay work a child experiences working with materials that he could feel and shape with his hands. Gradually he will learn to use special tools to have the satisfaction again of working with three dimensional materials. When a child works with concrete materials, he develops the ability to recognize differences in size, shape, texture and weight: to identify specific tools and know how to use them carefully, to know when and how to ask for help. A knowledge of materials may give him pleasure, working with them may develop as his hobby. An increased feeling of independence would make an impact in the development of personality and behaviour. A variety of skills he can use for many activities inside or outside home. Knowing how to use tools to build or to repair, can even help the deaf in getting himself prepared for open adult employment later on. A knowledge of his own capabilities and realistic job aspiration would help him in being integrated into the society at large.

Creative experience of the deaf in the visual arts and other media would have significant impact in the integration of his personality. The act of creating serves as a catalyst in mobilizing the different strengths in the person and welds them together to form a total productive personality. Through his capacity to express himself he learns to develop a more positive self-image and self-esteem as a productive human being. He takes pride in his creations and enjoys showing his work to others. He feels inspired to perform to the best of his capacity in a fit of self competition.

The quality and quantity of the language and education that can be acquired by the deaf do not depend only on the intelligence level of the child, but also on many other factors. For example, an early recognition of hearing loss and the motivation of both the parents and the child toward speech learning would go a long way in the education of the deaf. A bright child with well motivated and well informed parents may even achieve normal speech through combining lip reading and the maximum use of residual hearing.

Educational experiences for the deaf need not be sterile or lacking in enjoyment. Success in learning and in the attainment of goals is a reward in itself. Creative opportunities have to be provided to each child. It is necessary to allow plenty of time for creative activities, for enjoyment and for free activity, since these bring their own reward and are as important to the total development of the child as the attainment of formal learning goals (Stevens, 1976).

It is, therefore, important to provide opportunities for children to benefit from creative activities, such as, drama, music, physical education, swimming, games, sports and wide range of recreational activities. In fact, virtually all activities open to normal children, should also be available to the handicapped. These are essential parts of their education and of their personal development, since such activities can often provide the means of self-expression and a source of satisfaction.

Some educators are of the view that the school is best spent on other activities, particularly in the teaching of social skills in order to help the child to learn to live in the society, and on creative and recreational activities, so that children can learn to occupy themselves outside school hours, and acquire leisure interests and hobbies. Filling leisure time constructively is difficult for the handicapped. However, their attention could be undivided because of cut down of auditory stimulations so that they are more able to concentrate on work at hand.

The child's first oral group is his family. As a member of the family he participates in simple every day life situations and gradually becomes initiated and integrated into an oral environment. He learns to live first as a member of his own family and later on as a member of the larger communities of neighbourhood, school etc. If he is well integrated into his family, he would experience more success in his endeavours outside. With increasing awareness and feeling of belongingness to the family, he learns to orient himself to its routine and other play activities. He also learns to imitate speech of other members in the family whom he loves and cares for, and accepts as models.

The mother is the connecting link between the child and the outside world. If the mother's attitude towards her child's disability is negative and rather confused, it may affect the very core of the mother-child inter-personal relationship. If a warm relationship and understanding do not exist between the mother and the child, he would feel isolated which might lead to serious emotional deprivation on the part of the child, eventually retarding his growth and development. An affectionate contact, on the other hand, between the mother and the child would give rise to further stimulating interaction of the child with the rest of the family and his environment. Meadow (1980) found that parents' attitudes and child-rearing practices may contribute most to the slow development of social maturity in deaf children.

Many a times the parents of the deaf refuse to acknowledge the existence of deafness in their child or may even react unfavourably by feeling rather constrained to hear such an unusual problem during child rearing. Though the parents are concerned about the future of their child, often they become confused as to how to establish communication with the child. However, the parents need to give such a child every opportunity to learn to communicate. The deaf child needs to associate with other hearing children during pre-school years; although communication would be limited; because of commonness of children's interests, the deaf child would be able to gain some social skills. Concerned parents may also observe the methods adopted by teachers for teaching the deaf in a classroom situation that might be followed up in the home situation as well.

There is a good deal of pressure on parents to provide their deaf children with early training and education. In addition to strain and communicative frustration, there is also strain of extended demands on the mother's time and attention. Mothers of pre-school deaf children are reported to be less permissive, more instructive, more didactic, less creative, less flexible and they were found to show less approval of their children, in comparison to their counterparts (See Meadow, 1980). The parents of deaf children reported the children's needs or their own felt needs for more constant supervision in order to protect them from accidents, narrower range of disciplinary techniques including more spanking, and they also reported more frustration around child rearing. Such mothers were constantly concerned with being either over-protective or underprotective or they had either too much or too little expectations.

The mother's dilemma in finding a balance between withholding appropriate opportunities for her child to develop independence, and exposing him unnecessarily to the danger imposed by his handicap, has major implications for socialization and child development theory. The role of father in families with deaf children has not been studied much; it seems they interact less than mothers (Jordan, 1962). It has also been reported that fathers experience more difficulty in learning sign language (Meadow, 1980). The implications of having a deaf child in the family also differ depending on the gender of the child, whether the concerned handicapped child is male or female.

The broad objectives of education for the deaf are generally the same as those in the education of all children. The aim of giving education to him would be to help the deaf to develop as a person so that he can manage his own daily personal affairs and regular work and can get a job according to his potentialities. Economic rehabilitation of the deaf is of utmost importance. Though there is no cure for sensory-neural deafness, special education and an intensive learning programme can help the deaf in acquiring knowledge, speech and language. Saini (1981a) observed that "They have the capacity to learn, to work, to undertake responsibilities, to share sorrows and pleasures, to act as disciplined soldiers, dedicated workers and enlightened citizens of the country, provided they are afforded enabling opportunities. They have proved better workers in offices, as well as in factories". The present day urge is for availability of services with equal access for handicapped citizens so that they can have as normal circumstances, and as least restrictive environments, as possible. In an investigation Ghai and Sen (1985) studied work adjustment and job anxiety of different categories of the handicapped in open employment. It was found that the deaf had the best work adjustment followed by the orthopaedically handicapped, the blind and the normal control, respectively.

Education of the deaf would mean development of his potentials so that he can apply them successfully in coping with the situation he encounters in the hearing world, in the process of his rehabilitation into the society in terms of his social, psychological and economic adjustment. This would essentially involve improving his communication skill—both verbal and non-verbal. This communication must serve his needs and help him to adapt to an oral environment so that the deaf can live up to the requirements of the society at large.

SOCIAL REHABILITATION OF THE DEAF

The integration of the deaf to take an active part in this 'noisy' world is a serious challenge. Severity of any impairment is aggravated in proportion to the individual's isolation from the society. Socialization of an individual involves the process of preparing him to live in the society or of inducting him into the more and manners of his community. The process of integration should start at an early stage right from home to educational institutions, to play grounds, expanding gradually to a variety of social situations to work places.

Absence of any reliable source of information regarding number of handicaps poses itself as a handicap in the way of proper planning and formulation of policies for the welfare of the handicapped. However, with a view to fill in this gap in information, the National Sample Survey Organisation (NSSO) launched on July 1,1981, a countrywide sample survey of the handicapped persons in India. Meanwhile the planning of welfare programmes was being done mostly on ad-hoc basis. According to Government of India sources the number of handicapped is about 10 per cent of the total population with an annual increase of 40,000 among them. Out of this 10 per cent handicapped, about one per cent has been estimated to be deaf which would mean around 6.84 million persons having hearing impairment in this country (See Saini, 1981 b).

Integration of the deaf into the society would mean development of his potentials, so that he can apply them successfully in coping with the situation he encounters in the hearing world in the process of his rehabilitation into the society in terms of social, psychological and economic adjustment. The objective of the programme would be to help the deaf to fulfil his potential and adjustment in society.

Meadow (1980) found self-image scores were positively related with family climate, school achievement scores and communication skills. Individuals or institutions affect the development of the deaf. Parents of deaf child, other members of the family, teachers and other people in the community all influence the social development of the deaf. Deaf children whose language development is retarded will have fewer opportunities for social interaction both within and outside the family. Furfey and Harte (1964), however, observed that the deaf are not a homogeneous group, and successful adjustment of the deaf needs appropriate planning by the community, the family and the deaf person. The younger is the child, the better it is for him to start learning to use his hands to make something. With the simplest of arts and crafts, in the simplest of home environments, parents can stimulate their child's development. Parents need down-to-earth advice and ideas about the many things they can do with their children to help them get ready for education and stimulate their interest.

Focus on creative activities of successful and otherwise able-bodied persons has always been there, such as the artists, scientists, administrators, and the like. However, not much attention has been paid to the creative potentialities of the handicapped persons, which is a reflection of the attitude towards the handicapped, in general. Nevertheless, some great examples like that of Beethoven, Helen Keller or for that matter occasional news items about the creative arts of some handicapped persons in many parts of the world, do attempt to oust the stereotyped attitude towards the handicapped. The indomitable master of music, Beethoven was not to be subdued and he wrote to his friend, "I will grasp fate by its neck". The fate refrained sprang from Beethoven's anguish over his progressively increasing deafness. This is a unique example of human being's refusal to be classified in absolute terms.

Every individual is a promise with an open ended future of almost limitless possibilities. Some of them are so gifted that it is almost beyond our knowledge and ability to deal with their promise. Some are handicapped to such an extent that their problems are of severe nature. Even then they too have a promise and great examples of Beethoven and Helen Keller transcend the barrier of time and places.

Another important aspect is that, if the deaf learn to work together as a group, each person contributing whatever he is able to do best, they also come to realize that patience and self discipline are absolutely necessary to transform a good idea into a finished product. When they are having the training in a group, it leads to pre-vocational training and experiences, such as attentiveness, to instructions, concentration on tasks at hand, and self motivation. They also learn to develop concern and consideration for other members in the group, as also learning of the use of tools, learning to co-operate with others, which are some of the pre-requisities for success in vocational adjustment.

The process of socialization and consequent integration of the deaf or for that matter any type of handicapped, cannot be fully realized without effective understanding and concerted efforts of all concerned such as parents, teachers, psychologists, psycholinguists, speech pathologists, and audiologists, social workers and educationists. It is necessary to have a clear understanding of the extent of the barriers of deafness, and of the social isolation resulting from the improverishment of learning experiences. Ways and means must be found out for releasing the maximal potentials within the deaf child, as he learns to relate to his environment. Educational devices and materials must be selected and planned in relation to his communicative powers, his cognitive and social development and personality make up. The preparation for life for hearing impaired child involves development of his potential abilities so that he can learn to apply them successfully to cope with different situations encountered by him in the 'noisy' world.

"No matter what capacities a person has lost, other capabilities remain. The first big step in giving new hope to a handicapped person is to find what he can do best... It is a living faith, it would involve service, team work and genuine belief in our individual responsibility toward our fellow citizen, with the conviction that the true object of all help is to make help unnecessary" (Wiegers, 1976).

To meet the needs of the deaf, a comprehensive programme is needed so that he can be a valuable and productive member of the society. The V.R. Ruia School for the deaf at Pune is also doing very useful work and has earned a name for itself. The school known as V.R. Ruia *Mook-Bodhir Vidyalaya* is being run by 'Sikshana Prasarak Mandals', since 1953. In January, 1883, a few dedicated and concerned teachers formed this society in Poona. This society, started many educational institutions in the field of education, including the one for the deaf. The philanthropic Ruia family of Bombay came forward with generous help for the school. This school has now more than 1,000 students. It has undertaken the most challenging task of educating the hearing and speech handicapped children. It has also a Teachers' Training Course for 30 students. Efforts are being made to make the handicapped socially productive and financially independent individuals by giving them vocational training. It has also been claimed that a number of past students of this school are well settled in different industries, in and around Pune. However, a few of them, are said to be carrying on their business independently in diversified fields like painting, interior decorations, photography etc.

The Helen Keller Institute for the Deaf and Deaf-Blind is another very well-known institute. Completely free of charge, it was started in 1977 under the auspices of the Society for Special Education for the Deaf. This is a pioneering educational institute, the only one of its kind in India, which provides education for the deaf-blind.

The total number of schools for the deaf before Independence was only 47 catering to the need for educating about 1,125 children, comprising of 67 per cent boys and 33 per cent girls, respectively. There are at present around 120 schools for the deaf, a few are run by Government and a majority of them by voluntary agencies. These schools can cater education to about 10,000 deaf mute children. All India Federation for the Deaf (AIFD) came into being in 1955; it is doing very useful work and has established a multi-purpose training centre for the deaf. It aims to work for removing the crippling condition for the scars of deafness. The General Assembly of The World Federation of the Deaf adopted some resolution in August, 1971, declaring the rights of persons with impaired hearing (See Appendix-II).

The AIFD has brought out the publication 'Mook Dhawani' in 1968 ; it provides a blend of specialised services. It is affiliated to the World Federation of the Deaf, Rome; as a National Federation, it has affiliated 24 state associations and 20 major schools for the deaf in India. Dr. D.K. Nandy, himself a victim of hearing handicap is doing remarkably well as the General Secretary of the Federation. There are about 12 Teachers Training Centres in India ; the first Teachers' Training classes were started in Deaf and Dumb school in Calcutta, around 1930. About fifty per cent of these training centres, *i.e.*, six centres are in Maharastra only.

A national Institute for the deaf has also been started in recent times. Government of India started an Adult-Training Centre for the Deaf in 1962 at Hyderabad. All India Institute of Speech and Hearing was started at Mysore in 1963. Rehabilitation and research for the Handicapped were started in Delhi in 1974. Lady Noyce Secondary School in Delhi is one of the best known schools in India. There are about 45 associations for the welfare of the deaf basically engaged in social and vocational rehabilitation of the deaf. The schools for the deaf in different States of India which are more than 100 in number, impart education to about 10,000 children (Gupta, 1981) providing training for the deaf in crafts like tailoring, sewing, carpentry and wood work. In 1977 the Government of India earmarked three per cent of jobs in Class III and Class IV categories for the handicapped, out of which one per cent was solely meant for the deaf. However, considering the total number of population in our country, these deaf facilities are simply not adequate enough.

CHAPTER 6

The Orthopaedically Handicapped

Throughout the ages, natural and man made catastrophies have rendered many a person incapable of functioning fully, all over the world. Such victims are invariably labelled as handicapped. The handicap deters individuals in their necessary day-to-day life activities. Physical disability can arise from early disorders, possibly congenital, of the nervous, skeltal and muscular systems, such as cerebral palsy. Some people become physically disabled from damage of the nervous, skeletal and muscular systems due to accidents involving brain and spinal injury. Others suffer from diseases such as tuberculosis of the spine, motor neurone disease, multiple sclerosis, or brittle bone disease. Still others suffer from disorders such as Parkinsonism, muscular atrophy, progressive muscular dystrophy and cerebral vascular accidents (strokes). Such a disability can come to anyone at any point of life, by accident, by disease or by a stroke.

Physical disability is no respecter of age or person ; the type and degree of handicap experienced by the affected person varies from individual to individual. Persons with this kind of disorder are likely to have been at a disadvantage since birth. However, their problems are often more or less tractable than those who become physically disabled later in life.

MAGNITUDE OF THE PROBLEM

The disabled in India constitute a unique majority embracing every religion, caste, and both males and females in all ages from the newly born to the elderly. General estimates of the disabled in India include about seven per cent of the population. The 1970 census of U.S.A. included for the first time, the incidence of disability, and a total of 40 million non-institutionalised handicapped (of all categories) were estimated. In U.S.A. it was estimated that out of 1,000 children there were about 21 orthopaedically handicapped, (Uḍay Shankar, 1976).

The NSSO report (1983) estimated 1,047 males and 597 females per 1,00,000 population who have shown at least one of the locomotor disabilities, in rural India. For Urban areas the estimated number of affected persons are 800 males and 544 females per 1,00,000 population.

According to the Census report of India (1981), the population of the totally crippled was reported to be 3,63,600 which accounts for the second largest number of the disabled in India. Among the totally crippled, the total number in rural areas was found to be 3,04,640 as compared to 58,960 in urban areas. The proportion of the totally crippled per 1,000 population was estimated to be 0.555. It is obvious that the problem of physical handicap in India is a major one. It is apprehended that by the end of the current century there will be more than 600 million disabled in the world. One third of the world's population under 15 years of age would belong to developing and under developed countries and 150 million of these children are anticipated to be disabled. Worse still, India being the second most populous country in the world, its proportionate share of the handicapped persons seems to be increasing with alarming rate, indeed.

TYPES OF PHYSICAL DISABILITY

The basic definition of physical disability has a reference to the inability to move normally or to exercise proper control over movement. The affected persons have decreased range and strength of movement, or they may exhibit unwanted and uncontrolled movements. For instance, a child with cerebral palsy may be unable to hold his hand steadily to write properly. An adult with muscular dystrophy may feel quickly exhausted by writing, as it demands great effort. This would implicily mean that the basic condition of the handicap is an organic one, irrespective of whether it is congenital, or the result of physiological dysfunction or traumatic condition. The anatomical, physiological and neurological aspects of the handicapping conditions are of primary concern for medical diagnosis, prognosis and treatment. However, it is also of utmost importance to have a psychological understanding of the problems of the physically handicapped.

The boundary between physical and mental handicap is not necessarily clear cut. Many mentally handicapped persons may also be physically disabled and many of them may have severe problems in conceptualising, and usually beyond the reach of formal education. On the other hand, many physically disabled children and adults do not necessarily lack intelligence or other mental faculties and cognitive functioning; and with appropriate help, education and training may be imparted to many of them.

The term physically handicapped has been defined in various ways by different authorities. Definitions of disabilities have been based on different purposes and different criteria. Orthopaedically handicapped children may be classified from the point of view of eligibility for Governmental aid for special education services (usually assigned to special schools or classes) without reference to causation, or they may be categorised etiologically according to the pathogenics (nature of the causative factors), or the nature and position of the damaged tissues (referred to as pathology.)

A number of *definitions* have been proposed on the basis of practical educational considerations rather than on scientific groupings. According to the New York Education Law, a crippled child is one "under twenty-one years of age, who by reason of physical defect or infirmity, whether congenital or acquired by accident, injury, or disease, is or may be expected to be totally or partially incapicitated for education or for remunerative occupation, but shall not include the deaf or the blind".

The subcommittee on the crippled, of the White House Conference on Child Health and Protection states (reported by Sethi, 1981) that "the crippled child, in the orthpaedic sense, is a child that has a defect which causes a deformity or an interference with normal functions of the bones, muscles, or joints. His condition may be congenital or may be due to disease or accident. It may be aggravated by disease, by neglect, or by ignorance". "Children are eligible for special classes, if they cannot attend regular classes with safety and profit to themselves and others". This definition is rather more specific.

Sethi (1981) also quoted that the sub-committee on orthopaedically handicapped children, Board of Education of the City of New York which states that "Principles of admission to special orthopaedic classes should be rigid and only children in need of protective care or special educational methods which cannot be applied in the regular classes should be admitted to them. Only those unable to conduct their lives with safety to themselves or others should be admitted to special classes". It is obvious that definitions or classifications of this types although may serve useful purposes, usually provide no information regarding the type of case, the nature of the pathology, the symptomatology, or the pathogenesis of the disabilities.

According to the Commission for the study of Crippled Children of New York City : "A crippled child is an individual under twenty-one years of age who is so handicapped through congenital or acquired defect in the use of his limbs and body musculature as to be unable to compete on terms of equality with a normal individual of the same age."

Physical disability, according to the Department of Social Welfare, India, includes impairments caused by congenital anomaly (*e.g.* clubfoot, absence of some body member, etc.) and impairments from other causes (*e.g.* cerebral palsy, amputations and fractures or burns with contractures). Thus physical disability is not necessarily something that is physically imposed, recognised, or caused, or only manifested physically or psychologically, nor is it a malformation or malfunction. It is simply a variation in physique upon which ordinarily a highly negative value is placed. The negative value could be placed in three ways: (*i*) imposed by society, (*ii*) imposed by the person himself, and (*iii*) imposed by a typical physique. Whatever be the source, this negative value has important repercussions on the personality of handicapped individual.

The prevalence of muscular paralysis and bone disorder have caused widespread concern. Muscular palsy has the obtrusive nature of most severe degrees, and it creates grave impediment for the child's successful educational and socio-economic adjustment. The predicament of muscular bone and joint disabilities is quite well known. The paralysis may involve one limb or muscle group (monoplegia or local paralysis), one side of the body (hemiplegia), both sides (diplegia or quadriplegia), the lower extremities (paraplegia), or three extremities (triplegia, hemiplegia in addition to paralysis of one limb on the other side).

Louttit (1957) has used the term orthopaedic impairment to cover the neuromuscular disabilities which include *cerebral palsy* and *poliomyelitis*. Polio is a neuromotor disease; it is caused by the polio virus which attacks the nerve cells in the spinal cord leading to paralysed maucles, deformity and pain. It does not affect intellectual functioning or learning abilities. In India 90 per cent of polio cases are said to be affected between the age of six months and five years; but it can even strike even at the age of 30. (Uday Shankar, 1976).

Cerebral palsy may take different forms. About 50 per cent of cerebral palsied children sufier from plasticity involving involuntary contractions of affected muscles resulting in tenseness and inacurate movement. Nearly 25 per cent of the cases suffer from *Athetosis* which is manifested in the form of marked incordination and constant movement of limbs or extremities. *Ataxia* may occur in another 25 per cent of the cases wherein lack of postural balance with lack of sense of orientation in space may also accompany. In *tremor* (which is a rare variety) rhythmic movement of muscle group may take place. Another rare variety of cerebral palsy is *rigidity* which is characterised by continuous muscle tension and stiffness.

Some cerebral palsied children may have speech impairment; mental retardation is also found to occur in about 50 per cent of the cases. Some affected children may have also visual and auditory impairment. *Scoliosis* is another form of physical handicap wherein lateral curvature of the spine takes place. Person such affected might bend on one side and in severe cases, may have limitation of movement, and results in irregular joint and other deformities.

Many times multiple deformities are also noted which may result from blood incompatibility. Drugs like L.S.D. are noted for chromosomal abnormalities leading to malformations in the bodily structure. Maternal intake of drugs during pregnancy, therefore, may lead to the physical deformity of the child. Malnutrition, which is quite prevalent in under-developed countries leads to sluggishness, learning disability and other physical handicaps, such as rickety limbs. Victims of malnutrition are in numbers in India.

There are in fact so many kinds and causes of orthopaedic handicaps that assessments of their unique characteristics is not simple. Another type of deformity is the *limb deficiency*, since birth. Such children have some sort of congenital amputation or malformation of the legs or arms. The *Clubfoot* is another type of deformity, still another variety is *Rheumatoid Arthritis*. The psychological problems of the amputees are enormous, but these are often neglected.

The study conducted by Lee (see Baker, 1959) showed that in addition to crippling conditions, many other physical and sensory defects occur with an average of about two per child. The multiple nature of handicaps in the case of orthopaedically handicapped points to the need for consideration of factors in addition to the principal defect. Spastic child is born with cerebral palsy, which is a disorder of movement and posture, appearing in the early years of life due to damage or failure of a small part in the brain, controlling movement. Cerebral palsy may take many forms, it is usually identified as paralysis and associated disorders of motor functions arising from damage to the brain during birth or soon afterwards.

CAUSES OF DISABILITY

The causes of physical disability are many and varied. As there are different types of ailments, so there are different types of causes. In cerebral palsy, neuromuscular disabilities are characterised by disturbances of the motor function resulting damage to the brain and central nervous system. The manifestative symptoms may be displayed in the weakness of the muscles or excessive involuntary movement, plasticity or lack of balances in postures. The degree and extent of damage determine the severity of disorder. The main cause of this disability is assumed to be brain fever or brain anoxia which may occur at pre-natal or post-natal stages.

The Rh-incompatibility between the mother and the father, infectious disease, virus infection, anemia, intoxication of the expectant mother are some of the causes at the pre-natal stages.

Similarly, difficult delivery, prolonged labour or some kind of birth injury may cut supply of oxygen to the foetus, damaging its brain. During post-natal conditions, disease like encephalitis or lead poisoning or accidents may cause damage to the brain leading to neurological disorders.

Polio is mostly caused by water-borne virus; the disease may occur in epidemic form more in urban areas where immunity against this disease is not so strong. The virus through drinking water or other liquid medium gets multiplied affecting the spinal cord, and gradually the motor cells. Damaged motor cells cause placid limbs or defective postures or contracture of limbs.

Children suffering from limb-deficiency usually suffer from congenital amputation or malformation of limbs. This condition may occur due to poisoning of the foetus while in the mother's womb, or due to intake of drugs like thalidomide during pregnancy.

COGNITIVE CHARACTERISTICS

Psychological evaluation of the orthopaedically handicapped is a complex issue. For instance, in cerebral palsy, optimum testing conditions as well as functional level of vision, audition and motor co-ordination are basic for any examination. With cerebral palsied children, the chance of suffering from additional sensory defects increases. Evaluation is very much dependent on speech and motor responses and with these neuromuscular involvements, this becomes a major obstacle, especially in respect of standardized tests. However, the child's physical condition does not necessarily preclude the administration of the tests.

In ages over six, standard tests can be applied in the majority of the cases. Farnald and Arlitt (1925) for instance, found a mean IQ of 82 in a group of 194 crippled children; while Lee (1942) found an IQ of 86.8 on the average, in a group of 148 crippled children (See Baker, 1959). Thus, generally lower intelligence tests results have been obtained for samples of cerebral palsied children. There is a fairly close agreement to the suggestion that there is a wide distribution of intelligence quotients from the mean.

Intelligence test performance is affected not only because of limitation due to physical factors, but also due to the restricted scope of learning experiences. Thus the handicapping condition may lead to deprivation in terms of common experiences. The attempt to determine the psychological characteristics associated with polio must take into account the fundamental question, whether the condition is the result of the disease, or the type of hospitalization and convalescent care and possibly the crippled condition itself (Louttit, 1957).

Studies dealing with the effects of polio on intelligence and other cognitive functioning do not suggest that deviations are to be expected just because of the disease process. Variations have been observed from mean IQ of 83.8 (Fernald and Artlitt's study) and IQ of 92 (Lee's study, 1931) (See Baker, 1959). In general, no relation was found between intelligence and age of onset of the disease or signs, suggestive of cerebral involvement at the onset of the disease. Gorden *et al.* (1939) found a mean IQ of 103.9 in a group of 98 children ranging in the age group from 4 to 16. Pintner *et al.* (1941), in summarising studies on intelligence of crippled children, concluded that children crippled by poliomyelitis are, on the average, mentally superior to other crippled children. Children with cerebral involvement (Polioenceplatitis) have been reported to show difficulties with visual-motor tasks and spatial relationships and impaired comprehension abilities.

PHYSICAL DISABILITY AND PERSONALITY

The physique of a person often determines how he is expected to behave in the society and what he will be permitted to do. Normal variations in physique, and physical disabilities could be sources of psychological disturbances of children and adults. A person who has lived with congenital handicaps, may have learnt to accept the condition as such, though he may have some degree of awareness. On the other hand, an acquired handicap of marked degree occurring after several years of normal physical activity, may cause severe frustration. Such frustration may even lead to serious problems in psychological and social adjustment.

The crucial problem of the orthopaedically handicapped is one of physical and economic misery. Physical handicap imposes on the individual certain limitations. The physical, psychological and social functioning of the individual are disrupted depending upon the nature of disability, differential experience and group influence. The physically handicapped almost invariably experiences a variety of psychological problems. Restriction in physical activity and blocking of normal channels of childhood play may have far reaching consequences upon the natural tendencies of the children.

Relationship within the members of the family constitutes one of the critical aspects in personality development of the disabled child. It has been found that certain reactions in the parents, such as guilt, are reflected in the fantasy life and in the behaviour of the child with physical limitations. Perhaps the most important problem of the handicapped person is the realization of his restricted role in society which probably evokes aggression, and a feeling of helplessness and frustration in him.

In the development of personality, body image plays an important role; it determines individual's ideas of his own and ideas of others about him. When unexpected illness or accident occurs, the body image has to undergo a change or modification. In the beginning it is very difficult for a person to find a place in the society with his new body image. The consequence of undesired body image has a serious impact on the social life of an individual.

The disabled invariably face anxiety and frustration. The victims of physical disability in adulthood feel more frustrated than those whose disability commenced in childhood. The disabled very often are found to be quiet, conforming, tender-minded and somewhat tense. The pre-occupation of these handicapped persons with their body image and conformism point out to the typical concern of the disadvantaged to conform to the norms of the privileged, able bodied persons. Their concern for conformity demonstrates their hightened need to look like normals, which is also equally true of their existential concerns with regard to their body image.

A realistic look into the problems a disabled individual is likely to face, would certainly suggest maladaptive personality patterns. These are liable to become tombstone of his developments, thereby perhaps leading to further frustrations and helplessness.

Two major view points are found to exist regarding the effects of disability on personality. One view point emphasizes that physically handicapped are helped rather than hindered by the disabilities. Adler (1926) in his theory of compensation advocated this view point. Crippling in that case becomes, in fact, a source of strength. He proposed a relationship between bodily defects and behaviour, suggesting that the driving force in human nature is the experience of a need to excel and to overcome any handicap. A number of instances, in fact, are available to substantiate such a view point.

The other point of view which is rather a common belief, insists that all mental, moral and spiritual disorders are linked with physical affliction. According to Allport (1953), physical built is associated directly with personality. Strong bodies, well-formed and socially approved statures predispose people to develop extraverted, realistic and social traits. Conversely, malformed or markedly a-typical physiques tend (in relation to social and environmental standards) to produce introverted, intellectual, or artistic personalities.

Sethi (1981) quoted another point of view as expressed by Campbell as early as in 1919, which suggested that a physical handicap may in some situations act as a stimulus and a challenge and call forth all the resources of personalities. However, it may be compensated for in other less desirable ways. The dissatisfaction arising from one's personal defects may be lessened by adopting various defence mechanism, such as by disparaging the particular goal one cannot reach or the activity in which one is inferior, or by decrying the merits of the other, and the like.

Yet there is another perspective which has an entirely different approach to the understanding of the relationship between disability and personality. It recognizes the disability, the individual personality, and social environment as closely interlinked and, therefore, no single factor can account for the personality of the handicapped. An organic disability becomes an actual disability only when the handicapped senses a defect and becomes conscious of that defect reflected by his environment.

STUDIES WITH THE PHYSICALLY HANDICAPPED

Empirical data on the physically disabled, though are increasing of late, are still not exhaustive. According to past hypothesis in this area, physical disability is believed to leave its mark on the individual. It may be 'crippling' not only in the literal sense of the word, but also as used colloquially. It may cripple a person as much mentally as it may cripple him physically. It may ruin his cognitive functioning, distort his conative processes, or render him incapable of withstanding reality. Schoggen (1956) had pointed out that the physically handicapped as a group are not unique or different psychologically (see Ravindran and Karunanidhi, 1983) and the handicapped have exactly the same kinds of basic psychological needs as the non-handicapped.

Projective techniques have been quite effective in exploring the social needs of crippled children. Broida *et al.* (1950) used the *Symonds Picture Story Test* to differentiate three groups of crippled children who varied in the context of feeling of fear. A subgroup that had unfulfilled needs to be free of fear, revealed a great need for social acceptance and participation. Such children experienced conflict because their needs for increased social integration were assumed to be counterbalanced by fear of entering social situation.

Using a 'Sentence completion' test with crippled junior and senior high school children, Cruickshank (1952) found that social relationships do constitute a problem area for many crippled youngsters. In their desire to be treated as individuals, and not as handicapped persons, they wanted their peers and other adults to overlook their disabilities, in spite of the fact that they often lacked some of the social attributes necessary for this. As a group they were less able than the able-bodied control subjects, to evaluate interpersonal relationships. They had a tendency to withdraw from social contacts, and they also showed relatively fewer 'normal' adolescent interests.

Using the *Rozenweig Picture Frustration Test*, Smock and Cruickshank (1952) found that the level of frustration tolerance of handicapped children was lower than that of normal children. Similarly Linde and Patterson (1958) used the *Minnesota Multiphasic Personality Inventory* (*MMPI*) with handicapped college students and noted that the cerebral-palsied subjects employed by them, tended to show emotional maladjustment. However, no specific patterns of personality types as such, appeared to differentiate the disabled from the control group. Some of the differences were attributed to the anxiety generated by the disability and the concomitant tendency of the disabled to withdraw from social contacts. Lynch and Charles (1973) conducted a study which examined the methods of coping with frustration in 38 handicapped and 38 non-handicapped children using the *Rozenweig Picture Frustration Test*. Though an extra punitive approach was predominant in both the groups who did not differ between themselves, significant differences were found to exist in the use of secondary coping behaviour.

Studies in the Indian Context

Of late some studies are available in India as well, which particularly dealt with different aspects of the physically handicapped. Bhatt (1963) while studying physical, psychological, social, educational and vocational aspects of physically handicapped, interviewed 600 handicapped persons in Bombay, Pune and Ahmedabad. Regarding family and social life, she found that about 23 per cent had left their families because of their handicap, while another 7 per cent had no family. The level of unemployment was high (around 73-81%) among them, and they had less motivation to seek work. About 74 per cent of the handicapped were accepted by the family, while 12 per cent felt rejected occasionaly, and the remaining 14 per cent were both rejected and deserted. The percentage of those who were accepted was higher (about 77%) in the case of nuclear families than in joint families; likewise the percentage of acceptance was higher (87%) in the rich families than in the poor families.

The data obtained by Bhatt (1963), as presented here shows the handicapped persons' percentage for the type of attitudes of their friends, neighbours and caste people:

	Friends	*Neighbours*	*Caste People*
Positive	69	55	47
Indifferent	30	23	32
Negative	1	12	21

The initial reaction to disability was reported to be fear (fear mixed with panic and anxiety) in 70 per cent of the cases and the rest had inferiority complex or guilt feelings. Vocationwise those who were working, 32 per cent were reported to be content with their jobs, 47 per cent were happy while 11 per cent were unhappy, the rest 10 per cent were neither happy nor unhappy.

Using projective tests Deb (1967) studied the personality pattern of the crippled children in addition to the pattern of the ego of the hospitalized crippled children with projective tests. In his study nine male children who had been hospitalized with the diagnosis of post-polio residual paralysis, were selected. Murray's *Thematic Apperception Test* (TAT) was used to ascertain the personality pattern of the boys aged above ten years. The results suggested the unconscious guilt feelings and severe superego pressure forcing libido of the patient to regress from the oedipus level to the oral or pre-oral dependent stage. It was interpreted that as the ego is very weak, the client was scared of facing the reality and did not try to overcome the unconscious fear of castration, in connection with taking up a masculine role. Castration fear may be one of the causes which enhanced the paralytic condition of the patients. It was argued that there may be physiological causes for this condition, but the personality pattern also becomes contributory factor for remaining in the same dependent (paralytic) stage. Psychological factors leading to the enhancement of the physiological problems were explained arguing that the patients have oedipus fixations, guilt feelings for the desire, severe superego and castration fear. As a result of their guilt feelings for their oedipus wishes, the weak ego accepts castration due to the pressure of the severe super ego. Thus physiologically affected body parts, has psychological impact on the victim.

Bose and Banerjee (1969) studied 30 physically handicapped institutionalised children with the objective of understanding the masked inner life and drawing up their personality make up on the basis of the test findings. The results revealed the presence of some covert determinants in these physically handicapped children. It was argued that while these covert determinants structured an active inner life, the negative pull of the said marked inner life made them withdrawn and passive, resulting in crippling their spontaneous liveliness. Passivity and withdrawal became compensatory behaviour magnifying their invalid condition and sustaining the same. Their failure in acquiring social skill was also supposed to be related with them. It was argued that they were victims of invalid condition that developed as a direct sequel to their original illness or trauma and due to the interaction between their developmental background and interpersonal relationships.

Prasad *et al.* (1971) conducted a study with 20 subjects in the age range of 15 to 62 years. The first phase of the study procured information from patients by means of a questionnaire, followed by administration of the Rorschach projective technique. The various aspects studied, covered personality characteristics, thought disturbances, personal and social relationships, attitudes toward self and others and phantom limb phenomenon. On personality dimensions, extraversion and introversion dimension was also studied. The introversion features were found to be more characteristic in the age group of 15 to 25 years, while the extraversion features were more dominant between 26 to 40 years of age, who were interested mainly in social and outgoing activities. These activities were marked with personality characteristics, such as frankness, sincerity, dominance and decent behaviour in dealing with others. On the other hand, the introverts were found to be withdrawn, sensitive, shy, reserved, secretive and nervous in character. Their attitude toward their present situation was found to be pessimistic in eleven cases, indifferent in five cases and realistic in rest four cases. None of them were found to have marked features of depression; in addition, six of them exhibited mild hysterical characteristics. On the whole, the majority of the handicaps of this group had hypochondriacal features, narcissistic traits, self centredness, poor interest in human beings, low adaptability to surroundings, lack of emotional warmth, weak ego, poor imagination and limited interest, in comparison to the normal able-bodied subjects.

Mathew (1974) observed that persons with body defect showed more inferiority feelings, as measured on a 80-statement 'Inferiority Feelings Questionnaire', than those without any body defect. A blow to one's body image can create inferiority complex. The feelings of incapacitation may result in lack of confidence in one's abilities and bring in a host of psychological barriers in personal and social adjustment. One group comprised of paraplegics, while the others were amputees. In some unfortunate instances, people become disabled during their productive life due to some disease or accident; when this kind of handicap occurs, it leads to serious implications, different from congenital handicap.

In a comparative study of the personality patterns, life satisfaction and problem patterns of orthopaedically impaired and normal male adults, Ghai and Ittyerah (1980) found that the handicapped were less independent, less well adjusted, but more satisfied than the able bodied normals. They were also found to have confronted with significantly higher number of problems in the domains of home and psychological and social adjustments.

Sethi and Sen (1981) made an attempt to examine the level of intelligence, creativity, self-concept and frustrations of orthopaedically handicapped children and compared them with their normal counterpart. The sample consisted of a group of 20 orthopaedically impaired children and a group of 20 normal children in the age range of 8-12 years. The results obtained were not fully in conjunction with the hypotheses formulated. The intelligence level of the handicapped subjects though found to be similar as that of the normals, their creativity scores differed significantly, the normals depicting more of creative powers. The handicapped subjects held a better concept of themselves, but did not vary much on their reactions to frustrations, as compared with normals. The results were interpreted with the suggestion that locomotor handicap does not impair mental development as severely, as do their disabilities. However, greater scores on fluency of thinking as observed in the normal children, suggested that perhaps they have a better ability to produce ideas in a limited period of time as compared to handicapped children. Normal children were also seen to be more flexible in their thinking and exhibited the capability of giving more unusual and clever responses and remote associations. They were also observed to construct more complex objects on the foundations of one or two simple lines. It is possible that this may be due to the greater accessibility of varied events and situations to the normal children. These results also supported the findings in the literature that intelligence and creativity are not necessarily related to each other, as though the range of scores on Coloured Progressive Matrices (CPM) Test observed for the normal group and the handicapped group were the same, these however, did not lead to comparable creativity scores of the two groups.

The self-concept of the handicapped was found to be significantly better than that of normals. The results indicated that the handicapped children do not view themselves as inferior to others; and they were found to hold a firm belief that they are as capable as any one else, in the private and social sphere. This finding however, is not without controversy. A study by Singh and Akhtar (1971) on the private and social self of handicapped children, yielded significant differences on the social self, but none on the private self. The better self-concept of the handicapped children could be attributed to the provision of the special care and education available to the handicapped child in the day training centre. Vocational training and work are also provided to the disabled in such centres, and these could lead to the enhancement of self-concept by removing fear of feeling of ambivalence regarding the handicapped child's future.

In Sethi and Sen's study (1981), the handicapped were not found to differ significantly from the normals on their frustration level, except for two factors, namely, need persistence and ego-defensive impunitiveness. The higher need persist-scores of the handicapped group indicated that they pointed out more emphatically the solution of the frustrating situation. The lower scores of the handicapped group on ego-defensive impunitiveness, on the other hand, indicated that the ego of the normals predominated and thus they, made attempts to gloss over frustration in order to avoid aggression. Hence both the factors taken together point to the fact that non-realisation or non-acceptance of frustration, or both occurred in the normals. Their self-concept scores were also seen to be related to frustration. An extra-punitive approach, however, was common to both the groups. The predominant approach in the handicapped group was an intropunitive one, wherein the blame for the frustrating situation was turned on to oneself; and predominant approach in the normal group was impunitive, wherein blame was evaded to gloss over frustration.

The analysis of the frequency of certain responses obtained on the P-F scores (Picture Frustration) yielded a number of findings. Analysis of variance of these scores yielded significant results on just two factors, namely, need persistence and ego-defensive impunitiveness; but in addition, the median test showed significant differences on certain other factors too (Intropunitiveness, Impunitiveness and some sugerego patterns).

A higher frequency of need-persistence scores in the handicapped group indicated that these children emphasized greatly the solution of the frustrating problem. This shows that the handicapped children were more realistic in their approach towards frustration and were endowed with a greater amount of self-realization. The normal children, on the other hand, were escapists, always trying to evade blame and responsibilities. The handicapped children also had a higher frequency of intropunitiveness scores; indicating a low self-appraisal as evidenced by their tendency to put the blame for the frustrating situating upon themselves. Impunitiveness scores were obtained in a greater number by the normal children; wherein blame was evaded in order to gloss over frustration. This also suggests a tendency towards escapism, evasion of responsibilities and to some extent even insensitivity, in normal children.

Ego-defensive impunitiveness Factor (M) was found to be more in the normal children, thus indicating a trend towards ego-predominance in normal children. The normal children were thus aggressive and dominating in their attitude, their escapism could also be attributed to their egoistic attitude.

The scores obtained on the superego patterns were indicative of the subjects' defensiveness in denying the commission of a wrong; hence the results yielded by these scores were more in the nature of defense mechanisms. The frequency of scores of the handicapped group indicated defense, rationalization and achievement orientation. This shows that while the subjects maintained a defensive attitude towards denying the commission of wrong, they also denied the occurrence of such wrong-doings or made attempts to rationalize their behaviour. But because of a conscious awareness of their wrong-doing, a tendency to aspire for the better was present, thus leading to achievement orientation.

The normal children, on the other hand, were always trying to absolve themselves from blame; they exhibited passive defense in nature and defensive in their attitude towards things, yet they did not express overt defensiveness. The passive defense could be a consequence of the fear of parental disapproval. Passive defense was not found to be present in the handicapped, probably because parental disapproval does not play a vital role in the lives of the disabled. The disability of the children might have caused enough guilt in their parents and refrain them from further disapproval of their children.

Hence, on the whole, the handicapped children were found to exhibit a low self-appraisal and were self-condemning; but they had a realistic approach towards their problems. They attempted to cope with these problems by means of defense mechanisms like rationalization; they were basically more intropunitive. The normal children, however, were egoistic, dominating and escapists. Being more impunitive in nature, they tended to employ defense mechanisms in the form of reaction-formation, in order to cope with their frustrations.

Rao (1981) reported studies on the orthopaedically handicapped children who were compared with normal children on some psychological variables. The handicapped group was found to exhibit low self-appraisal, passivity, low ego strength and projected aggressiveness. They were found to be more worrying type, exhibiting self-condemning attitudes and submissive reactions. However, they took a more realistic approach toward their frustrations. Most handicapped children employed coping strategies that were successful. In one study the handicapped children were given picture frustration study; the results showed that the children were more intrapunitive. The disabled generally differ from the non-disabled with regard to the attitude towards purpose-in-life. In contrast to popular notions, the disabled in most cases exhibited a better appreciation of the purpose-of-life and were better adjusted. They were relatively free from anxiety owing to the fact that they generally come to terms with their disability and set goals which are realistic; thus they tend to be more satisfied and happy.

Ghai and Sen (under publication) in a study compared deprivation level and self esteem of the deaf, the blind, and the orthopaedically impaired males, working in open employment, *vis-a-vis* their normal peers. This study was undertaken in the context of the fact that a major segment of the population lives in underprivileged and deprived environments that stifle their potential for development. Deprivation becomes a special problem for the disabled, when along with physical deprivation, they are also faced with socio-cultural as well as economic deprivation. Closely associated with deprivation is the issue of self esteem. Body image is a very important aspect in any human being's life; for the disabled it assumes all the more significance, because any distortion in body could lead to poor self-image and may have important repercussions on his adjustment in the society, at large.

This study used 90 disabled – 30 each from each of the three different disabled groups and a comparable group of 30 normal employees, matched on age, education, SES, job tenure and nature of job. Misra and Tripathi's prolonged deprivation scale (1976) and Prasad and Thakur's self esteem scale (1977) were administered to the four groups for determining the level of deprivation and their self esteem. Analysis of data revealed that the four groups were significantly different ($\chi^2 = 95.79$, df=3, $P < .001$) in the context of deprivation, the blind group being the most deprived followed by the deaf, the orthopaedically impaired, and the normal subjects, in that order. The four groups also differed significantly in the context of self esteem ($\chi^2 = 31.53$, df=6, $p < .01$), the disabled group showing relatively more negative selves as compared to the normal. The subjects of each of the groups were divided into three subgroups in terms of Positive, Negative and Balanced Self Esteem. Inter-comparisons of the subgroups in terms of deprivation level revealed that in each group, the negative esteem category had significantly higher deprivation score followed by positive and balanced self-esteem, respectively.

Rao (1981) reported a study of handicapped individuals with regard to reaction to frustration employing picture frustration tests which showed that the paraplegies were quite ego-defensive Individuals who were rehabilitated by providing them with artificial limbs, and were able to move about freely, showed remarkable change in their attitude. They were almost comparable to normal people and they did not suffer from inferiority feelings and any undue ego-defensiveness, at least apparently.

Ravindran and Karunanidhi (1983) found that the physically handicapped and the normals, when compared in respect of job involvement, did not significantly differ from each other. Physical impairment may impose limitations on the person as well as it may reflect limitations imposed on him, because of socially and culturally defined reactions (Barker, 1948).

In a study with the physically handicapped Agrawal and Dhar (1982) found that those who had been physically handicapped later in life, had greater uncertainties and frustrations, as compared to those who were afflicted with the disability early in their lives. Most of the disabled seemed to be fairly satisfied with their achievements during the last five years. Some of them who were not confident about their future, felt uncertain about future. In spite of their disabilities, physically handicapped still had some self-confidence. Being deprived of able bodies, they have shown certain expectations from the society and they have also learnt not to make compromises with their miseries. The authors remarked that the handicapped's desire to cope with the disability, was quite pronounced.

Ghai and Sen (1985) studied work adjustment and job anxiety of the physically handicapped along with other categories of the handicapped who were in open employment. The sample consisted of 30 orthopaedically handicapped, 30 blind, 30 deaf, and 30 normal industrial employees working in open employment. The work adjustment was assessed by an Indian adaptation of Palmer's (1974) *Work adjustment Schedule*. The job anxiety of the subjects was assessed by Srivastava and Sinha's (1974) *job anxiety Questionnaire*. The results showed that after the deaf group, the orthopaedically handicapped showed best work adjustment.

SOCIAL REHABILITATION

Any person who deals with disabled children and adult knows that their needs vary greatly from person to person and in the same person over the time, depending on both the nature of the disability and the stage of intellectural development. For instance, in some cases, poor eye-hand co-ordination may be due to visual handicap as well as due to lack of fine muscle control such as in athetosis, or un-coordinated involuntary movements associated with brain damage. Some cannot reach very far ; others have impaired speech or even none at all. Physically disabled people with good speech are at a disadvantage, but those without good speech are doubly handicapped.

The question of educability as well as the provisions of special education programmes for the cerebral palsied child are too complex. It has been emphasized that the level of intelligence, drive and co-operation and the content of damage in the central nervous system are some of the important variables in dealing with the treatment of the cerebral palsied child. Awareness and knowledge of cerebral palsy is lamentably poor in the society ; social worker has a vital role to play in this respect. He may impart information to the parents and the members of the family about the scientific knowledge of cerebral palsy. Various community groups may also come forward in helping to bring about general awareness of cerebral palsy and its affects.

Again in the case of amputees, each individual reacts to amputation according to his predisposition. This is modified by cultural background, training, and resources. It not only affects psyche of the affected individual, but also his economic, vocational and social adjustments. The causes of disability influence the adjustment of physically handicapped in society. A soldier wounded in war is much respected in society than a worker injured in a factory. The attitude of disabled towards his disability varies from person to person and also according to the nature of deformity.

The psychology of the amputee is very complex and the psychological problems of the amputees are enormous and are often neglected. Treating the psychological problems faced by the amputees often has more significance to his life, than the quality of the surgery or the nature of the prosthetic device, which in a broad sense, implies dealing with his emotional state. A large number of them suffer from self pity, anxiety, depression, insecurity and even guilt feelings. Though majority of them have accepted the surgical operation, they become disappointed and depressed after amputation; anxiety also is predominant.

A great difficulty in accepting the loss of the limb is faced by patients whose amputations are as a result of accident or trauma. In the cases of bilateral amputees the maladjustment is most prominent in the occupational, financial, marital and sexual spheres. Chronic reactions after amputations are found to be a generalised feeling of restlessness (anxiety), feeling of inferiority, depression and development of metaphysical attitude towards life. They have disturbances from their body-image; they prefer to avoid society and usually develop feelings of inferiority and distaste towards it. The general personality pattern appears to be depressed and full of anxiety. Their main apprehensions are regarding occupation and economic aspects of the family. Indifference on the part of the patient indicates their dis-interest towards self and society, making them more prone to succumb to psychological breakdown. If these factors are kept in mind during the treatment period, the affected individuals are certainly facilitated in their adjustments in the society and in overcoming their emotional problems.

Over the years there has been a great improvement in the designs and functions of upper extremity prostheses. These prostheses, though not exactly comparable to human hand and arm, still provide good functional substitutes for them. Krukenberg operation is a plastic procedure in which the forearm is phalangised into a radial and ulnar ray. It is of immense value to the bilateral below elbow amputee, especially to those who are also blind for whom neither sight nor touch is present, if prostheses are worn. The unique benefit of this operation is that prehension and sense of touch are preserved, and the amputee is exempted from the trouble of putting on prostheses for functional purposes.

It has been reported that patients who have undergone Krukenberg operation have achieved total independence not only in activities of daily living, but also became well settled in jobs. After adequate training, they were able to attend to their personal hygiene, dressing (though buttoning up their shirts would be too difficult for them), eating, smoking, writing, cycling; and even though they are unable to perform heavy manual work, they can attend to their jobs (within limit) very satisfactorily.

In a UGC sponsored National Seminar on the Physically Handicapped held at University of Poona in November, 1981, Lt. Colonel Mathur (Mathur, 1981) reported results of 95 Krukenberg operations stating that the operations had been successful in all the cases, and the patients were immensely benefited, as they could achieve complete independence from a state of total helplessness and dependence on others, without the help of a prosthesis. He commented that the merits of this plastic procedure, therefore, outweigh the sole objection of its appearance, which too can be looked after by wearing a cosmetic prosthesis for normal appearance.

Colonel Chahal, Professor and Head of the Department of Orthopaedics, Armed Forces Medical College at Pune, maintained that traumatic paraplegia and tetraplegia pose a major rehabilitation problem to any nation, due to the severity of their disability (Chahal, 1981). He reported that a conservative estimate would account for 15 to 20 such cases per million population in India as compared to 30 to 49 per million in America and Australia. He further stated that on the average about 50 paraplegies are received every year and about 500 paraplegies have been successfully rehabilitated after treatment within a span of ten years. Most of them are reported to be leading healthy lives and mortality percentage is quite low (about less than five per cent).

This factual information points to the need for proper rehabilitation. To attain this objective, appropriate training programme of the staff involved in the rehabilitation program, is of utmost importance. Furthermore, the personnel concerned are needed to have an understanding of the problem of the disabled and they should have more sensitivity to the psychological needs of the disabled in order to help them in developing positive attitude towards life.

The rehabilitation programme have to be individualized, because the handicapped differ in their disability, both in terms of degree and nature from one another. If the handicap is properly identified, suitable rehabilitation programme can be implemented by providing necessary assistance. They can be trained for desirable outcomes in the areas of educational, personal, intellectual, occupational, and social functioning. The handicapped thus can be helped to live a productive, creative and self-fulfilled life, instead of being dependent on the society and living helplessly. One such centre, the first Paraplegic Home was started in 1974 at Kirkee, Poona. The Paraplegic home provides a clean healthy living with free boarding and lodging. There are facilities for playing indoor and outdoor games; a concrete Basket Ball ground with a gymnasium provides recreational sports and excercises. A sheltered workshop is also being operated which provides jobs and vocational training to those who stay at the home.

A trust for the welfare of the physically handicapped was started in Delhi in 1981. Since its inception in July, 1981, Amar Jyoti Trust has been trying to reach the physically handicapped in and around Delhi. It has 23 camps organised in 21 localities; since its inception, over 1600 people have been attended to, by this Trust.

The camps are organised following a door-to-door survey conducted by their volunteers who are to identify those persons needing aids like callipers, artificial limbs, tricycles, wheelchairs, crutches etc. The medical team headed by Dr. S.P. Mandal, an orthopaedic surgeon, examines the cases and measurements are taken for the aids required by the patients. It has been claimed that in the subsequent camp (normally after a month or so) these aides are distributed free and new cases are medically examined. Also the volunteers are said to conduct follow-up visits to the beneficiaries regularly to as certain that the aids are being properly used and to give appropriate advice, whenever necessary. This Trust is also running a school for an integrated group of physically handicapped and other children in New Delhi with the help of the Raja Ram Mohan Roy Trust. The objective of such schools points to the fact that if children are exposed early to accept disability, they can cope and adjust remarkably well with their handicap.

There is no individual howsoever severely disabled, who cannot undertake at least some work. It is often forgotten that the disabled individual still possesses residual resources which are intact. The handicap is experienced when the disabled person attempts to achieve a goal for which he is not fully equipped. In all other circumstances, the handicap does not necessarily exist, and the disabled individual is a whole person. Physical handicap does not mean a vocational handicap ; and it is not necessarily related to the work adjustment of the disabled worker. A number of studies (Pockrass, 1959; Block and Campbell, 1964; Bollinger, 1969; Buresova, 1969; Wolfe, 1974; Tseng, 1975; Arn, 1976, Gonuj Kar, 1981; Batra, 1981; Agrawal and Dhar, 1982; Ghai and Sen, 1985) have shown that the disabled are as productive as the normals.

The handicapped are under two kinds of pressures; new psychological situations, and overlapping psychological roles. It is possible that the experiential background and capacity to cope successfully with a wide variety of situations probably have not been permitted to develop. If the disabled has identified himself with his disability, it would lead to frustration and conflict, coupled with emotional problems and disruption in behaviour. It pays to remember that the disabled workers not only need vocational training and guidance, but also a sympathetic attitude and congenial social atmosphere.

The occupational and educational aspects of the adjustment of the handicapped lie in enabling him to learn skills with maximum efficiency and to have as much educational attainment as possible. In the educational set up, the handicapped individuals need to be given more individualised attention in accordance with their impairments. All these would imply that for the training and integration of the handicapped in the society, a systematic and precise evaluation of their potential abilities is one of the prerequisites.

PART III

This Section deals with various issues related to Mental Handicap.

CHAPTER 7 : *THE MENTALLY HANDICAPPED*

CHAPTER 7

The Mentally Handicapped

The problem of mental handicap has best been described in the following lines :

> "Mental retardation is perhaps the greatest single source of human suffering. The child born mentally retarded is not only a tragic human figure in himself, living yet not alive, since he is never to be what he could have been, but he is the innocent agent of profound and endless suffering to his family and a perpetual burden to his society".

Since the days of Itard and Seguin almost every country has been concerned about the problem of the mentally retarded persons, which includes their education, training and habilitation in the community. The phenomenal growth and development of interest in mental retardation after the Second World War, to a large extent, may be attributed to: (*a*) a reawakening of interest on the part of the medical practitioners and social scientists, (*b*) increasing parental concern and involvement and (*c*) public awareness of the impact of the problem in the society.

MAGNITUDE OF THE PROBLEM

No nation can claim to be free from the problem of mental retardation. Like the poor they have always been with us. They may come from any racial stock, any type of family background or creed. Of four billion habitants on our planet, about one to three per cent are estimated to be mentally handicapped (WHO, 1968). The problem of mental retardation is quite serious particularly in an over-populated developing country like India. For a long time the stigma of mental retardation led families in India to conceal the occurrence of mental retardation in any member of the family. Conducting a national survey to determine the incidence of mental retardation in India would perhaps never be possible, as it is bound to meet with insurmountable difficulties like lack of necessary funding and other human and material resources, involved in it. In spite of this, some sporadic sample surveys have been conducted in different cities like Calcutta, Bombay, Delhi, Nagpur and Bangalore, from time to time, invariably showing conflicting results. The first scientific study of the problem in India was reported by Kamath in 1951 who made a survey while standardizing the Binet test for Kannada-speaking people. He found that about four per cent of the school going children were mentally retarded. Kuppuswami (1968) however, reported an incidence of "true retardates" in the school population in Mysore as 1.4 per cent only. No convincing data to account for these conflicting results are still available (See, A.K. 1981, 1982).

Children under 15 years of age constitute about 42 per cent of the Indian population. It has also been estimated that among the children of school going age, the percentage of the mentally retarded may be anywhere between one to five per cent. The number of mentally handicapped children has been estimated to outnumber all the other handicapped, such as the blind, the deaf or the orthopaedically handicapped.

This gloomy picture, however, has a silver lining as around 75 per cent of the retarded are known to be only mildly retarded; another 20 per cent is moderately retarded, and only 5 per cent is assumed to be beyond any hope, who need custodial care. India has an area of 32,76,141 sq. kms., and it is the seventh largest country in the world. Nevertheless, India being the second most populous country in the world, its proportionate share of severely and profoundly retarded is increasing with an alarming rate.

The nature of care and training required for different categories of the retarded, however, is not the same. The problem is much deep rooted; even the concept of retardation is not clear to many. The legal provision for the protection of the retarded is far from being satisfactory. The attitude of the public towards the retarded is lamentably unfavourable. The literacy rate is very low in India. Around 70 per cent of the population is illiterate; about 34.16 per cent literacy rate has been reported in the 1981 census. There are about 60,000 villages in India; around 76 per cent of the population in India are rural habitants. Many families do not even recognise the presence of a retarded child, unless the problem is a severe one, when they try to look for some help from outside agencies. The number of such service agencies is also not large enough to cater to the bulk of the retarded. The existing services for the mentally retarded in India cater for less than one per cent of the total number of the retardates. There are about 150 institutions in India that can cater for about 7,500 mentally retarded. Even these existing services are not evenly distributed throughout the country.

The problem of the retarded in the villages is not the same as it is experienced in the cities. In the villages as also sometimes in cities, many are ignorant about the concept of mental retardation. When the child is unable to continue at school, he is automatically absorbed in the family trade. However, in many cases, their handicap would be conspicuous, if they are transferred from a rural setup to an urban one. In the cities, when the mentally handicapped child cannot continue at school, he poses a serious problem for the family as also for the community at large. Industrialization-cum-urbanization brings in more plight for the retarded in terms of their adjustment to the community.

Two decades ago mental retardation perhaps did not arouse much interest in the general public or among professionals. Lack of knowledge and understanding of the causative factors become a hindrance for proper planning of service-oriented programmes for the mentally retarded persons. Often when compared to his urban peer, the disadvantages of the rural child seem insurmountable. There is evidence from cross-cultural research all over the world that learning is enhanced by stimulation. But scope of learning continues to be restricted for those who live below the poverty line in India. Lack of motivation to learn also results in a larger number of drop-outs among the children of school going ages. These children feel equally dejected both at school and at home.

The population of the mentally handicapped persons in India could be anywhere between 18 and 20 million to which about 4,00,000, are being added every year. When this figure is added to the 40 million parents of retarded persons, the problem of mental retardation is assumed to affect one out of every ten individuals in the country, directly or indirectly.

THE CONCEPT OF THE MENTALLY HANDICAPPED

The definition and terminology used for mental retardation have changed over decades. Social norms, philosophy and attitudes and provisions available in different societies are varied. Consequently, the definition and classification of mental retardation also are influenced from time to time, throughout the world as new data emerge (See Sen, A., 1975). The definition given in the 1973 revision of AAMD manual on Terminology and Classification of mental retardation (Grossman, 1973) is as follows:

"Mental retardation refers to significantly subaverage general intellectual functioning existing concurrently with difficulty in adaptive behaviour and manifested during the development period". The 1975 revision of the manual has essentially retained this definition, after clarifying certain issues involved (Clements and Warren, 1975). The current emphasis is both on intellectual functions and adaptive behaviour in defining the level of retardedness.

The definition of mental retardation requiring that an individual will manifest deficiencies both in intellectual functioning and adaptive behaviour, also provides the accepted criteria for determining the degree or level of mental retardation, giving rise to four categories of the mentally handicapped:

(*i*) Mild retardation (IQ 52 to 68) : The development of an individual in this category is slow; he can be educated to some extent and with training he would be capable for earning, at least partially, his livelihood without living an undue parasitic life.

(*ii*) Moderate retardation (IQ 36 to 51) : Individuals in this category are slow in their development, but they are capable for learning to look after their personal needs. They can be trained to some extent to work in sheltered workshop and to live in protected environment.

(*iii*) Severe retardation (IQ 20 to 35) : Individuals in this category are often unable to manage their own affairs, and their motor development, including speech and language may also be affected in many cases.

(*iv*) Profound retardation (IQ 19 and below) : The degree of defectiveness of the individuals in this category, is of very serious nature rendering them unable to guard themselves even against common physical danger. Most often they are also physically handicapped and need constant custodial care for survival.

Clarke (1966), however, pointed out that social adjustment can hardly be precisely identified ; so that in practice, particularly, at the higher levels of subnormality, wide differences in interpretation of the definitions become imperative.

Clarke and Clarke (1974), however, later on remarked that for clinical purposes, the use of dual criteria is appropriate. They further comment that in terms of dual criteria of intelligence and social adaptability, only one of them, *viz*. intelligence is as yet measurable (though imperfectly). They also mentioned that it is only in cases of severe mental handicap, in which there is a high correlation between adaptive behaviour and measured intelligence, reliable diagnosis is possible.

The consensus emerges that borderline intelligence should not be included in the classification of the mentally handicapped. After excluding borderline intelligence ; the classification scheme provides four categories, *viz* , mild, moderate, severe and profound degree of retardedness. In England the last three categories are usually conceived under severe subnormality, while the first one, under subnormality. The dual criteria of mental retardation is useful, particularly at the lower level of intelligence where social adaptiveness seems to be highly associated with level intellectual functioning. By and large, the latest AAMD definition of mentally handicapped seems to be quite adequate.

The latest trend is to use the term 'mentally handicapped' rather than mentally retarded, as the latter presupposes a derogatory meaning in the term 'retardation'. As it is evident, it may be called by any name as one may wish, however, the problem and nature of the concept involved remain unmistakably unchanged.

PSYCHO-SOCIAL ASPECTS OF MENTAL HANDICAP

Learning is a very important phenomenon of human life and it occupies a central position in shaping human behaviour. A child begins his career as a learner at the time of birth and perhaps even before. Learning plays a crucial role in his development; it is through learning that he adopts the habits, customs and values characteristic of the culture in which he is reared. Again it is through learning that the child acquires the specific intellectual skills that mark him as a rational creature. Learning is greatly influenced by organismic, task, method and environmental variables. Readiness for learning, motivation to learn, reinforcement, exercise, distributed practice, active participation and over-learning are some of important methodological guidelines of learning process.

Integration of disabled child into the society, as far as practicable, is one of the basic objectives of any civilised country. In order to maximise his social integration he has to be equipped with his potentials which will lead to societal gains by avoiding individual loss and avoiding living of a parasitic life on his family. In order to achieve this objective, it is of primary importance to understand different kinds of disabilities, *vis-a-vis*, different psycho-social aspects involved in them. Knowledge accrued from such an understanding will result in an appropriate curriculum planning and programmes and adoption of various techniques in teaching-learning process of the disabled child. This will be implicitly associated with the aim of helping the child in acquisition of skills involved in personal, communicative, social, and vocational areas, in order to enable him to be a relatively self-sufficient individual in a pluralistic society.

The types of problems faced by different categories of the mentally handicapped are varied in nature. It would, therefore, be appropriate to examine different psycho-social aspects including cognitive, personality, emotional, motivational and other socio-cultural factors separately.

Cognitive Development

Cognitive development, in general, refers to the growth and change in such phenomena as perceiving, imagining, thinking, problem solving and concept formation. The major areas concerned in the studies related to the process of cognitive development are intelligence, perception, attention, memory, acquisition or learning, language development and communication.

Cognitive development in Piagetian terms (Piaget, 1952) may be summed up as the maintenance of balance between the internal and external world of the person, which follows an invariant sequence according to identified developmental laws of successive stage of complexity. The actual mental processes such as learning, memory, mediation, perception, etc., change qualitatively with age.

Most of Piaget's theorizing is concerned with how the child's cognitive structure, the model of reality, changes with age. He has stated that cognitive development depends on maturation, physical experience, social experience, and equilibration. Jean Piaget conceived intellectual development as an unfolding process, marked by the progressive disappearance of earlier symptoms of thought in favour of new higher order systems. What distinguishes the gifted child from the average child or the mentally retarded child, is not the stages that they go through, but the rate with which they undergo the stages. He thus tends to maintain that mental retardation is the result of child's failure to progress beyond inferior levels of stages of integration. The greater the degree of retardation, the lower the level or stage of organisation at which an individual is fixated.

Individuals may differ in the highest stage that they can ever attain. Some mentally retarded children may not even fully achieve the concrete operational stage.

Inhelder (1958) applied certain concepts to Piaget's theory to mental retardation. In general, the responses of the retarded are quite similar to those of normal children of younger ages, substantiating the developmental theory that retarded children progress through the similar stages as normal children and in the similar order ; but their rate of development is slower. In her classification scheme for mentally retarded, Inhelder considered the cognitive stage attained and proposed four categories : (*a*) The profoundly and severely retarded (idiot) who is viewed to be fixated at the level of Sensory-morter intelligence ; (*b*) the moderately retarded (imbecile) who is presumed to be incapable of surpassing the pre-operational intuitive subperiod ; (*c*) the mildly retarded (moron or educationally mentally retarded EMR) who is characterised as being unable to progress beyond the level of concrete operations ; and (*d*) the person with borderline intelligence who is capable of using only the simpler forms of formal operations. Similar categorisation of retardation have been provided in the psychometric classification system of mental retardation of AAMD and WHO, delineated by IQ points.

Ramaa (1981) conducted a study on the cognitive development of the educably mentally retarded; amongst other things it was observed that EMR children of 8.6 years were equal to normal children of 6 to 7 years in cognitive development as determined on the basis of Cognitive Development Status Test (CDST), developed by Padmini and Nayar in 1980, in the Department of Education, University of Mysore. A direct, marked relationship was also reported to be found between intelligence and cognitive development. Further it was observed that cognitive ability is more innate in nature and is less affected by Socio-economic status—SES of the parents. The mentally retarded have a limited capacity of conceptualisation.

According to Bender (1949), mentally retarded of all classes always tend to drift back to primitive principles in copying Gestalt-like figures, for example, dots become loops, straight lines become curved, and figures, parallel lines radiate toward or away from each other. Rorschach also observed that the mentally retarded react to the blot configuration with the minimum number of whole responses ; and he attributed the absence of whole responses to the fact that their associational capacity is very poor. Luria (1963) found that the retarded show particular deficit in using verbal mediation and inner language to guide thought and behaviour. Spitz (1966) observed that the particular defects of the retarded lies in their inability to organise stimulus information. Similarly the retarded also experiences difficulties in the inhibition of responses particularly.

Deich (1971) demonstrated that the retarded were significantly inferior to the normal children in Block Design, in terms of both reconstruction and reproduction. This result led her to conclude that the retardates show perceptual impairment, particularly in complex visual stimulus pattern. Phi-Phenomenon studies also demonstrated perceptual-motor deficits in the retarded. Griffith *et al.* (1959) studied extensively on the conceptual behaviour of the retarded and observed that they have difficulties in producing adequate abstractions, and are not very successful in attainment of concepts. It has been suggested that the perceptual functioning of the retarded would be at the same level as their level of intellectual functioning. The mentally retarded have been reported to be able to differentiate colours, but cannot generalise objects by colours. In a study of part-whole perception it was found that the ability to perceive parts and wholes in drawings follows a developmental pattern similar to that postulated by Piaget. They have poor capacity of integration, as they are supposed to be unable to link the part with the whole. They are also liable to show poor perceptual-motor and sensory-motor learning. They exhibit awkward gait and poor motor skills in throwing, in catching or in similar other activities. They are hyperactive and lack the power of concentration.

Many studies have shown that severe speech and language disabilities of the mentally retarded affected their development. It has also been noticed that as IQ decreases, incidence of speech and language problem increases. In fact, studies with the retarded, have been typically concerned with their speech and language disabilities. A disorder in speech and language has been found to be a severe limitation in an individual's ability to engage in social behaviour involving verbal and sometimes even non-verbal processes. Processes underlying reception of language are by no means, simple. It is necessary for the child to be able to attend, to listen, to discriminate between sounds and also to learn to adapt to the sequential aspects of incoming language.

A distinction between speech and language would be appropriate at this stage. Speech is defined as the use of vocalization or articulation to express words or vocal symbols. Language, on the other hand is a system of symbols wherein the symbols are systematically related to one another and are capable for generating utterances.

Radha Krishan (1981) remarked that the literature contains a number of studies which are concerned with speech rather than with language disabilities of the retarded. She maintained that typically, the incidence of disorders of voice or speech sound production, associated with organic causes, has been reported. O'Connor and Hermelin (1963) observed that there is a disinclination on the part of the retardate to use speech. The retardates are found to be poor in word definition and particularly in verbal encoding.

Weakness in the development of the verbal functions in mental retardates was recognised as early as 1908, by Tredgold and others. Some experimental evidence was provided by Luria (1959) and his colleagues from the Soviet Union as well.

According to Piaget (1964), there are four basic factors that interact in order to enable the child to acquire progressively more complex structures of thought. These factors are, maturation, equilibration, general socialization and educational and cultural transmission. Piaget emphasized that besides maturation, logic becomes a-priori but only through a process of equilibration. The work of Clarke *et al.* (1958) is an illustration which demonstrates how children whose backwardness may be considered as partly due to deprivation, may make notable advances in performances at an early adult life, in a stimulating surrounding.

In addition, the retarded appear to have a generalized deficit with respect to language behaviour, which probably stems from the subtle character of verbal cues as well as from basic attentional and motivational deficits. Both the attention deficit and the verbal (Symbolic) deficit may in turn be related to what is called an inhibition deficit. The relative inability of the retarded to inhibit responses may account for short attention spans. In language behaviour, the inhibition deficit is especially prominent with respect to the mental retardate's difficulty in following "do not" or "don't" instructions and may account for poor concept learning with respect to difficulty in learning to discriminate the common elements from the irrelevant elements, (*e.g.*, see Nagpal and Sen, 1981, 1983). Other deficits which are consistently revealed in the retarded, include delayed response and simple reaction time. Theoretically, both of these can be related to a lack of ability to maintain self-initiated sets (attention deficits) and a deficit in delayed response can also be related to a deficit in short-term memory or speed of learning. Presumably the retarded lack the self initiated sets which typically mark for consistent and continued responding in the normal. They tend to be more stimulus bound than the normal. It thus appears that the deficits of the mentally retarded include deficits in duration of attention, symbolic behaviour, inhibition and delayed response.

Their language development is poor and inadequate both in expression and comprehensive language. The mentally retarded may exhibit difficulty in visual or auditory perception. They also lack social skills and poor perception of social situation. All these deficits function together resulting in making them very slow and poor in their learning abilities.

Learning and remembering are very important phenomena in human life. The progress in skills and ideas depends on them. Efforts have always been made to enhance the efficiency of these processes. When a person is memorizing something, he is in fact, reviving the traces which were formed as a result of learning. The dictum that memory is the foundation of learning and that all learning is based on memory, is indisputable. In its broadest sense, the process of memory is commonly divided into three phases, *viz.*, (*a*) the phase of acquisition of material (learning phase), (*b*) the phase of retention (retaining period) and (*c*) the phase of reproduction or recognition (testing period) (Ingham, 1952).

Investigators unanimously hold the view, however, that memory is a thought process in which all these aspects interact. Human memory is a highly complex mechanism which involves processes that are relatively difficult to observe and to experiment upon, in a typical laboratory situation. On the basis of the emitted responses, it is perhaps only possible to infer the processes that operate within the organism. Memory is typically a personalised experience ; and hence whatever is remembered or recalled is coloured by the subject's own emotions, motivations and the contextual situation.

Thus the study of memory involves varied aspects such as input registration, storage, organisation, retrieval, etc. It is essentially a study of all the variables that determine behaviour at the time of test for retention. It is a search for variables which affects retention as observed by the different methods of reproduction such as recall, recognition, relearning and reconstruction.

Some of the cognitive characteristics often encountered in the retarded are deficit in cognitive skill and memory. Transfer of learning from one situation to another in the mentally retarded, is not very prominent, as it is conceived that they have poor capacity in perceiving the similarities and making generalizations. As a result they have difficulty in applying prior learning to a new situation. Their responses are supposed to be stimulus specific and concrete, as they fail to take into account the circumstances.

Ellis (1970) reported more rapid decay of memories in them. Brown (1974) found that they have difficulty in using strategies such as rehearsal to aid learning and memory. Mediational deficit in them has also been reported in many investigations. They are also found to be inferior in long-term retention of a mediational set. Their ability to organise verbal material and to apply conceptual schemes to its analysis, is also greatly impaired in the retarded.

Definite research evidence is available pointing out that retardates are particularly handicapped with respect to verbal and higher order conceptual abilities. The retarded are also less apt to use verbal mediation, rehearsal strategies and other control processes that facilitate learning and memory.

Even though the mentally retarded appear to have learning deficit (slower learning and poorer short-term retention than normals (Ellis *et al.*, 1963), it is important to point out that the mentally retarded can learn a variety of responses, sometimes almost as well as normals. There is not sufficiently available evidence of an appreciable deficit in long-term retention when the mentally retarded are compared with normals, provided the two are matched on original learning (Denny, 1964). On the other hand, they clearly exhibit a number of deficits which are related to both learning and general functioning.

One of the most basic deficits seems to involve duration of attention (Zeaman and House, 1963 ; Denny, 1964). One apparent consequences of the attention deficit is a special kind of incidental learning deficit. When the mentally retarded are sufficiently well instructed or guided, as under international learning conditions, they often do not show a learning deficit. But when retarded children are unwittingly posed with a learning task which is not only incidential, but requires responding to the same set of stimuli for about 15 seconds or so, before the critical item appears for learning, they show a marked deficit. However, if it involves object or colour identification which can be learned incidentally with a single glance, they may not show any deficit at all. Such a deficit could lead to large gaps in language development. Mentally retarded would probably encounter special difficulty in learning the meaning of relational or prepositional terms such as *behind, through, around, over* etc., the meanings of such concepts are difficult for comprehension for the retarded.

Memory is the basis of all learning, and that all learning including training and education, involves memory. Sen and Sen (See Goel and Sen, A.K., 1982) carried out a series of experiments dealing with both short-term and long-term memory processes in the retardates. The responses given by the retardates were compared under varying conditions rather than comparing retardates with subjects of normal intelligence.

The summary of the results of these various experiments are reproduced here:

(*i*) Retarded individuals can receive more information with more items (familiar) in a list in terms of absolute score (though in proportion the trend is, of course, reversed). This finding was noticed in free recall situations, both under simultaneous and successive presentation, and even when 'personal association factor' was controlled.

(*ii*) An exposure duration of about 32 seconds was found to be the optimum presentation period for 16 simultaneously presented pictures for the retarded subjects.

(*iii*) In successive presentation, a two-second exposure rate was found to be the optimum presentation time for 10 items, for both the retarded and severely retarded subjects.

(*iv*) When optimum presentation rate was exceeded, recall scores of the severely retarded tended to decline with the decrease in speed, while the score of the retarded remained at a plateau state.

(*v*) The phenomenon of 'trace-inaccessibility' could also be observed in the retarded subjects, and this kind of behaviour seems to be related to the personality factor.

(*vi*) The subjects who exhibited trace-inaccessible behaviour, made comparatively more intrusion error in a serial recall task than the control group of subjects, who made more commission errors.

(*vii*) Speed of verbal learning was found to be related with IQ level of the retarded subjects.

(*viii*) Once the material was well-learned, the retention score became independent of intelligence or learning trials.

(*ix*) Transfer of learning does occur in the mentally retarded subjects and that transfer effect is maximum when the subjects are given an equivalent task in the second occasion.

(*x*) In a serial learning task, the absolute error curve (U-shaped) of the severely retarded was found to be more skewed than that of the retarded; but ability differences do not produce any difference in the serial position curve, when errors were expressed as a percentage of total errors (McCrary-Hunter's invariance hypothesis).

(*xi*) The bow-shaped nature of serial position curve broke down with introduction of isolated items in the series.

(*xii*) Isolated items were learned more quickly (Von Restorff phenomenon) than the non-isolated items, regardless of position and nature.

(*xiii*) The total list learning was enhanced with the introduction of fully coloured pictures as isolated items (irrespective of their position), but not with coloured outline drawings. The nature of isolation thus, appears to be a major factor in the enhancement of overall list learning.

(*xiv*) Slow learners were relatively more assisted by the introduction of the isolated items than the fast learners.

Some of the most frequently remarked aspects of the behaviour of the mental retardate are distractibility, inattention and hyperactivities (Tredgold, 1949; House and Zeaman, 1960; Longnecker and Ferson, 1961; Gallagher, 1957). Comments on these aspects are frequently encountered with, in reports of concerned physicians and teachers. The work of some well known authorities has ascribed distractibility to brain injury (Strauss and Lehtinen, 1947; Strauss and Kephart, 1955; Cruickshank *et al.*, 1961). The recurrently mentioned concomitants of brain injury are hyperactivity, distractibility, emotional lability and inconsistency. But there is no consensus of opinion regarding the effect of brain damage on these aspects. Some studies reportedly associated increased distractibility with brain damage. However, the belief that the brain-injured group of mentally deficients would be more distractible than the familial type, did not receive support in many studies (Golden, 1956; Schlanger, 1958; Foschee, 1958; Gardner *et al.*, 1959; Spradlin *et al.*, 1959; Cromwell and Foschee, 1960; Ellis *et al.*, 1963; Girardeau and Ellis, 1964; and Brown, 1965).

Some of these studies (Foschee, 1958; Cromwell and Foschee, 1960), however, were carried out from the standpoint of activity level; and hyperactivity is assumed to be another concomitant of brain injury. The investigators reported that regardless of classification of subjects all groups showed significantly less activity with increased visual stimulation. It is interesting to note that the familial and organic subjects did not differ in activity in any condition. Zuk (962, 1963) suggested that distractibility in young retarded children is largely due to a function of over-attention to moving stimuli as opposed to stationary stimuli. Luria (1963) pointed out that excitable retardates are more distractible than others.

Sen studied distractibility in the subnormal in 1967 (See Sen, A., 1983) with reference to the interaction between type of distractor and nature of the task. The studies involved the manipulation of external stimuli and the nature and level of difficulty of tasks, using subnormal adults of two levels of verbal intelligence, as subjects.

The investigation consisted of a series of eight experiments including both verbal and non-verbal tasks (picture naming, verbal learning, cards sorting, perceptual-motor discrimination and cancellation tasks). In conclusion, the evidence clearly suggested that a highly significant factor in determining the subject's susceptibility to distraction from external stimuli, is the level of difficulty of the task. In addition, however, the results, taken in conjunction with evidence from other studies with both retarded and normal populations, suggest that further factors are also important, *viz.*, (*a*) the nature of the task; (*b*) its duration; (*c*) the intensity of the distracting stimuli; (*d*) the relevance of the distractors to the task; (*e*) in the case of conversation and related distractors such as stories, their attention value, and (*f*) the degree of learning.

The mental retardate had been conceived as having an attentional deficit which intercepts his learning process in multidimensional discrimination situation. It has often been indicated that he takes long to attend to the relevant dimension embedded in a matrix with other dimensions which are situationally irrelevant. Nagpal and Sen (1981, 1983) reported a series of three experiments with 30 subjects in each, examining the effectiveness of disincentive procedure in countering the delay due to attentional deficit in the learning of discrimination, in moderately retarded adolescents. The punishment procedure, better termed as 'dis-incentive procedure' employed in these studies, required the subject to return a two-paise coin out of the acquired pool of money as the cost for an incorrect choice. The findings lent support to the expectation of punishment expenditing the subject's performance across task situations varying on the dimensions of objects and figure patterns (geometric figures and common stimulus items used as from/colour discrimination and concept discrimination problems). Facilitatory effects were also obtained on the dimensions of two-choice and three-choice set-ups, both under simultaneous and successive modes of presentation. It was proposed that a subject, prior to being brought to the experimental situation, had varying initial probabilities of observing responses towards different dimensions. Punishment procedure accelerated directly the process of extinction of both attentional and instrumental response probabilities for the irrelevant dimension so that it enhanced the response probability of relevant dimension. At the memory level too, the punishable outcome accelerated the migration process of associations from the buffer store and short-term store to the long-term store, by increasing the aversiveness of the (punished) items.

These findings are thus consistent with the view that the retardate are, as a group, more likely to show distractible behaviour than normals, but a blanket description of them as being highly distractible is not sufficiently warranted.

In spite of all such deficits, it has also been pointed out in the literature that cognitive development takes place as a result of interaction of an individual with the environment. This has the implication that through enriched, congenial environment, and through manipulation of the environmental situation, it is possible to make one capable of utilizing his limited potentiality to the best possible extent.

Zigler (1969) believed that many of the reported differences in performances between the normal and the retarded of the same mental age, may be traced to such variables as motivation and experience, rather than to basic cognitive differences. It has been noticed that the retarded are not adept at the discovery and application of a language dependent concept within their realm of comprehension, but they do as well as normals in problems where perceptual rather than verbal modes of solution might be more appropriate. It was concluded that the greater the severity of mental defect, the greater would be the deficiency in verbal formulation of adequate conceptual performance.

"There is no more important topic in the whole of the psychology of learning than transfer of training. Nearly every one knows that transfer of training in basic to educational theory. Practically all educational and training programmes are built upon the fundamental premise that human beings have the ability to transfer what they have learned from one situation to another" (Deese, 1958). It has been endeavoured to extend this optimistic view even with the retarded who are proverbially handicapped for their learning deficits. The works of the Clarkes and their associates (See Clarke, *et al.*, 1967), Bryant (1964, 1965, 1968) and House and Zeaman (1960) are worth mentioning by this respect.

Sen, A. (1981b) carried out a series of experiments to examine the whole issue of age and complexity and duration of training tasks in the context of transfer in the retarded. The findings of these different experiments under separate considerations of three variables, *viz.*, chronological age, complexity of training task and amount of training, point to the generalization that all these variables need to be considered simultaneously on same footing, while planning any training programme for the retarded.

These findings suggested a careful planning of the training situation, giving maximum emphasis while the organism is still young. Selection of training material of optimum difficulty level and giving an adequate training on the task before switching them over to a real task situation, are some of the prerequisites for positive transfer effect.

Retarded children do not have a complete understanding of a concept even after producing accurate responses. Since these children often have difficulty with attention, short-term memory and association, over-learning needs to be an integral part of the special training programme. Improvement in learning, retention, transfer and relearning will be facilitated with over-learning. In order to control the chance of practising errors by the children, accuracy, rather than speed should be stressed upon. This is especially necessary in the early stages of learning when new and basic concepts are formulated; this will later form the basis for subsequent learning.

Personality Characteristics

The dimensions of personality in relation to mental retardation which could be considered include self concept, self acceptance, self direction, motivation, adaptive behaviour, among other factors. Self concept describes one's beliefs about one's ability to succeed. Self concept may be task specific, or it can be a generalised view of life as success or failure (Sellin, 1979).

Motivation becomes an important variable when the retarded is compared with the non-retarded. Research evidence suggests that many of the reported differences between retarded and normal children of the same mental age are a result of motivational and emotional differences; these again reflect differences in environmental histories, and are not necessarily a function of intrinsic differences. It however, does not imply that the cause of familial retardation is motivational ; the cognitive functioning of the retarded undoubtedly has a profound and pervasive influence on their behaviour. The crucial issue is to determine the extent of this influence as also to understand how does it vary across tasks with which the retarded are confronted.

The behaviour of the retarded reflects more than the formal cognitive processes. Therefore, the personality factors are as important as intellectual factors. Sen and Sen (1967) demonstrated that the mentally retarded who were more excitable (measured on a 'Excitability rating Scale' developed by Claridge and O'Connor (1957), were found to show trace inaccessible behaviour. If memory fails even when the trace contains the stimulus information, the trace is described as inaccessible. The trace inaccessibility in memory was demonstrated to be present in some of the subjects of a group of severely subnormal, alike intellectually normal persons. The subjects who showed this type of behaviour, made comparatively more intrusion errors in a serial recall task than the control group. This study thus suggested that this behaviour characteristic observed in some of the retarded individuals may be related to the type of personality such as excitability.

In one study, Kishwar and Shandra (1975) attempted to highlight the sociological factors associated with mental retardation. The results indicated that intellectual handicap may be a determining factor in moderate mental retardation; lack of proper motivation may be conducive to mental retardation. Andreanska and Andreanska (1981) summarized findings of a series of studies on the motivation of handicapped children. It was reported that contrary to the normal population, for most of the subjects (*i*) the sequence of their motivational responses was contingent upon the type of activity to be performed and that (*ii*) there are differences in the motivational behaviour of individuals with different handicaps. In the mentally retarded, for example, external stimuli were more effective source of motivation rather than internal stimuli.

The relationship between one's belief in one's ability to execute an actual performance has also been subjected to research although results are not conclusive. McCoy (1963) compared academically successful and unsuccessful mildly retarded learners; reaction rather than belief was found to distinguish between the two groups. Richmond and Dalton (1973) compared the self ratings of 100 mildly retarded learners with the ratings of their teachers. This study showed significant agreement between pupils and teachers. Furthermore, both ratings were found related to academic achievement.

Golow *et al.* (1963) have identified self acceptance as a variable related to performance and adjustment to community living. Acceptance refers to certain agreement of less ability in comparison to others without feelings of remorse or resentment. The effect of reinforcement upon self concept has emerged as a determinant. Studies by Piper (1971) and Spragne and Trappe (1966) have shown that immediacy of approval or reward improved positive feelings about performance as well as motor task performance. Welch (1967) investigated on the effect of background setting on self concept and academic achievement in a group of mildly retarded learners. A non-segregated setting reflected more positive gains in self concept, while the self-contained class reflected significant academic gains. Carr and Mclaughtin (1973) found that attending adult education classes though did not improve self concept, but did raise feelings or acceptance by peers.

Gordon *et al.* (1982) conducted a computer search of the records of 114 mentally retarded children and adolescents to determine the prevalence of behavioural and emotional problems revealing 25 per cent of the subjects showing such problems; prevalence was also related to the degree of retardation and age. Reiss *et al.* (1982) conducted two experiments evaluating the effects of the condition of mental retardation on psychologists' impressions of emotional problems of the retarded. Briefly, the results obtained confirmed the existence of a diagnostic overshadowing phenomenon in which the presence of mental retardation was found to decrease the diagnostic importance of abnormal behaviour. Menolascino and Swanson (1982) noted that retarded persons, because of high incidence of brain damage among them and diminished interpersonal coping abilities, present a greater than average risk of developing associated psychiatric disorders. It is also stressed that the psychiatric disorders among the mentally retarded are readily understood and amenable to contemporary psychiatric approaches.

In one study on 'responsiveness' of the mentally retarded, Sigelman *et al.* (1982) conducted interviews with 52 institutionalised children and 42 adults. Responsiveness, measured by the percentage of questions answered appropriately, proved to be a stable individual behaviour, positively correlated with IQ. Responsiveness also varied as a function of with "yes-no" type questions ; and question calling for choice among pictures consistently yielded greater responsiveness than 'either-or' questions.

Koller *et al.* (1983) examined the frequency and severity of different types of behaviour disturbance as they relate to the degree of retardation and sex. Hyperactive behaviour was most frequent among children with lower IQs. Aggressive conduct disorders in childhood was most frequent among females and antisocial behaviour was more frequent among males.

STUDIES IN THE INDIAN CONTEXT

About two decades ago the dismal state of affairs in the field of research in Mental Retardation was aptly summed by Das (1968a) in his comment, "the quality or quantity of research in this area is not high and very little research has been done in India". He remarked that this lack of interest is not so much as a result of indifference, but due to a "preoccupation with problems of national reconstruction soon after Independence such as land reforms, and reorganisation of state boundaries, which were relatively more vital than mental retardation". But, as Brijmohan (1969) points out, these preoccupations should not be taken as valid excuses for the neglect of the problems of retardation.

Research in this area, conducted by Chand as early as in 1932 on Down's Syndrome, was followed by epidemiological work of Sen (1937), Kamath (1951). However, the momentum picked up only in the sixties (Das, 1961 ; Deb, 1962) ; even though, the studies were still not in abundance. A well documented bibliography of 'Behavioural Science Researches in India' could trace about 38 studies of which only eight being published on Retardation in the 40 years period from 1925 to 1965 (Pareek, 1968). In the special volume of the Indian Psychological Abstracts in Clinical Psychology (Pareek, 1976), not more than 52 studies could be listed in the area of Mental Retardation during a period of 50 years ranging from 1920 to 1970.

Munjoo *et al.* (1960) reviewing Psychological Abstracts from 1927 to 1931 analysed all the references dealing with mental retardation and observed that no Indian study was reported in this period.

Das (1968a) made the first review of research work done in the field of Mental Retardation in India, and he included in this review the work done by Indians abroad, though the applicability of these studies to Indian conditions, would be limited.

Sen, A.K. (1976) could trace about 50 published studies in the field of mental retardation carried out in India during a ten year period from 1966 to 1975. The emphasis in these studies was on areas of cultural deprivation, learning and memory, factors affecting distractability, signal detection, intelligence and personality testing, measurement of meaning and perceptual skills.

Agrawal (1977) reviewed 52 studies reported in the area of mental retardation mainly on the aspects of classification, diagnosis, memory, learning under special conditions, personality, intelligence, and those dealing with management and rehabilitation. An evaluation of the problem in terms of its research and service aspects in India is available in ICSSR Survey of 1972. Pareek and Sood (1971) and Agrawal (1967, 1977) also presented fairly exhaustive survey of the work on mental deficiency of India.

Prabhu (1977) reviewing the work carried out in the country in the area of behaviour pathology and deviancy, observed that a substantial amount of work was being reported in the field of mental retardation, though there was no room for complacency or sitting back as many new horizons are yet to be explored in the field of mental retardation in India. In order to promote research endeavours in the area of mental retardation, the Federation for the Welfare of the Mentally Retarded in India (FWMR (I)) took some initiative and entrusted with Prabhu for preparing an annotated bibliography of all the published research work carried out in India over the years.

In the Indian context, research on mental retardates still lays much emphasis on epidemiological work. The actual extent of mental retardation still remains unknown, as the sheer logistics required to conduct a nation-wide survey of the incidence and prevalence of mental retardation do not seem to be so encouraging. Several small scale surveys, however, have been carried out in different parts of the country from time to time.

I. Epidemiological Studies

Kamath (1951) was the first to study this problem scientifically and conducted a survey while standardising the Binet-test for Kannada-speaking people observing that about four per cent of the school going children were mentally retarded. The Calcutta Survey by Ganguli (1962) was set out to study 75 schools in and around Calcutta; but the investigator was ultimately able to obtain permission to work only in 39 schools. On studying a selected sample of children from these 39 schools he drew the conclusion that there are "70 dull backward children per thousand school children and only 8 had been found to be mentally defective". In the Mysore Survey Kuppuswamy (1968), however, reported an incidence of "true retardates" in the school population in Mysore as being 1.4 per cent; it was also observed that incidence was higher in the low socio-economic class.

Verma *et al.* (1968) carried out a relatively large scale study on 3,114, 4,554, and 1,338 primary, middle and high school students respectively, in the city of Nagpur. He found the prevalence of mental retardation to be 1.70 per cent, 0.30 per cent and .01 per cent in the three categories respectively.

In a community survey conducted in Uttar Pradesh (Gupta and Sethi, 1970) a total of 8,583 individuals were screened by intelligence tests. It was found that in rural areas, the prevalence rate of mental retardation was 25.3 per 1,000 population, while in the urban areas, it was 18.5 per 1,000 population, giving an overall population prevalence rate of 23.3 per 1,000 population ; 64 per cent of the cases were identified as male, 74.5 per cent of the cases were below 10 years of age and only four per cent were above 20 years while the other 21.5 per cent came from families where the per capita income per month was less than 30 rupees. There was an inverse relationship between the per capital income of the family and the frequency with which the cases of retardation were identified.

Bharath Raj (1971) conducted an exploratory study of prevalence of mental retardation in Mysore city, screening around 4,000 children in the age range of 3-14 years in 13 schools for Learning, Speech and Hearing. Seguin Form Board Test was individually administered to measure IQ; the mean was found to be 94.28 and SD 19.95, and the distribution of IQ scores was positively skewed. About 14 per cent of the children had an IQ below 70. Government schools were found to have more retarded children than private schools.

A fairly large scale study was conducted by the FWMR(I) in 1977 on 2,742 children from 12 Municipal Schools of Delhi attended by children from lower strata of the society. It revealed that 10.3 per cent of the childen were retarded, 9 per cent of whom were mildly retarded mainly due to different environmental and lower socio-economic backgrounds, and that the parents of these children were unaware of their retardation. Kishwar (1977) pointed out that in U.P. alone, 2.5 million mentally retarded individuals were estimated.

Srinivasamurthy *et al.* (1980) conducted a survey of mental retardation in Raipur Rani Block in Ambala District, wherein 109 cases were identified in a population of about thousand. Majority of these respondents were males in the age range of 20-60 years, and most of them considered it a severe health problem. The cause of mental retardation was not specifically known to the respondents and majority of them considered it as fate, though some of them did specify that brain injury, malnutrition, and weakness might be the cause. The need for medical treatment was indicated by a significant percentage of respondents.

In a child guidance clinic survey, conducted in Delhi over a period of four years, Devi *et al*. (1980) clinically diagnosed 41 per cent of the children who attended the clinic, as retarded; 39 per cent of the cases were found to be in the 'borderline category', here too the males were found to be predominating. Clinical diagnosis of 818 children also revealed that 336 children were suspected to be retarded, 130 of these were referred for IQ estimation out of which only 64 turned up. The large majority of retarded children were found to belong to mild and moderate group.

Avasthi *et al*. (1983) proposed a community model in study of prevalence and identification of mental retardation in rural children. A group of 325, of children, 5 to 14 years old, were screened for mental retardation; 40 subjects were classified as "possibly retarded" and 43 as "poor school performers". Subjects' performances on the *Vineland social maturity Inventory*, the *Gessel's Drawing Test* and in *Form board test*, supported the classification of only 17 of the 43 subjects, as retarded. The prevalence of retardation was found to be 5.23 per cent. A combination of questions concerning delayed development in physical milestones and social maladaptation was suggested to be most useful in detecting retardation; a community based model for identification of retarded children was proposed.

Chakraborty (1985) conducted a survey in 1978 in Calcutta, the preliminary results of which was published in 1985. The survey covered 10 million people covering a radius of 50 miles around Calcutta, on general health, socio-economic and environmental conditions, as also in mental health. All major aspects of life, every occupation, including beggery, were covered in this survey. It was claimed that severely retarded was not difficult to detect as both the non-medical investigators could spot and medical supervisors confirmed. For the cases of 'mild' retardation for which the parents reported backwardness, the whole family background was evaluated.

Sen (1986a) conducted a study on prevalence of mental retardation in rural areas and some of its psycho-social concomitants. The first part of the study involved determination of prevalence rate among the school going children aged 6-16 years in the rural villages around Delhi, and their classifications according to the degree of retardation. The sample comprised of about 15,000 children from a tolal of 16 villages from four Delhi zones. The percentage of retardation was found to be 3.27 per cent in the total sample studied, that is, around 33 children out of 1,000 were identified as retarded. The results also suggested a higher percentage of retardation (3.57%) among boys than for the girls (2.87%). To be exact, out of 406 children identified as retarded, 253 were boys and 153 were girls. In both the cases retardation observed was maximum in the initial years of schooling (in terms of class) and the number of retarded children tapered off to a systematic negligible level in the higher classes. Most of the retarded belonged to mild category (90%) followed by 9.5 per cent of the children in the moderate category and only 0.5 per cent (only two children) belonged to severe category of retardation.

Singh, Gupta and Sen (1987) while working on early detection of mental retardation, found that the use of Illinois Test of Psycholinguistic ability (ITPA) and evaluation of child rearing practices, do help in early detection of retardation in the age group of 3 to 6 years, in both rural and urban setup. The sample consisted of 300 children; out of these children, 100 were from the child guidance centre at R.A.K. College of

Nursing, Andrews Ganj, New Delhi (representing urban retarded sample), 50 children were from an institution in Najafgarh Block, representing rural areas. An equal number of 150 normal children served as a control group for the present study. A total of 50 children (25 boys and 25 girls) were selected randomly from three different public schools of Delhi. Similarly three corporation schools were selected from Delhi to have a representative sample of 25 boys and 25 girls from the lower socio-economic strata. The remaining 50 children belonged to a school at Najafgarh (rural area). The Developmental schedule (developed by the researchers) though failed to differentiate between the normal and the retarded, the ITPA was found to be a valid instrument for differentiating between the normal and the retarded. Similarly, the child rearing practices interview schedule also clearly differentiated in terms of percentages, the retarded from the normal, on all its major dimensions.

II. Bio-Psychological Studies

Some research endeavours have been undertaken in India to investigate the crucial etiological role of bio-psychological factors in relation to mental retardation.

Desousa and Iyer (1969) evaluated 100 cases referred to the psychiatry department of K.E.M. Hospital, Bombay, with the problem of backwardness or epilepsy. It was found that 36 per cent had primary and 61 per cent secondary mental deficiency. (Details of the cases were as follows: four cases of Down's syndrome; one oxycephaly, one genetic microcephaly; six cases of mental defect resulting from birth trauma; one case of head injury after birth; and seven cases of epilepsy associated with retardation ; six cases of meningitis, five cases of encephalities; three cases of severe diarrhoea, and one of severe vomitting. In addition, 50 per cent of the subjects had behaviour problems).

Narayanan, *et al.* (1973) studied the Bardet-Biedl syndrome data from a sytematic clinical and psychiatric examination of 6,000 patients attending a mental retardation clinic over 10 years, reporting a diagnosis of 23 index cases of Bardet-Biedl syndrome and 21 additional cases among their siblings, 8 of whom died in infancy. A perusal of family history revealed 8 other similar cases in their relations, 5 of whom had also died. Psychoses, deaf mutism. and simian crease were some of the associated features in these cases.

In a different study, Narayanan *et al.* (1983) also described 10 cases of Maninesco-Sjogren Syndrome with classical features of cataracts, cerebellar starpia and mental retardation which were detected during a systematic clinical, psychological and biochemical screening of 2,000 mental retardation cases, in the age range of 5 to 13 years old. It was suggested that the disease is transmitted by a single autosomal recessive gene. The National Down's Syndrome Congress recently held at the Institute of Genetics, Hyderabad, in October, 1987 has highlighted works done in India, particularly in relation to Down's syndrome in the field of mental retardation.

III. Studies on Cognitive Functioning and Personality

Research work in other areas of mental retardation also gained attention of the related professionals, some of these are outlined here.

Sen (1937) in a study on 311 institutionalized delinquent boys found 50-50 per cent of them are mentally deficient.

Das (1961) studied the efficiency of three grades of retardates who were tested for acquisition, extinction, and re-acquisition of three kinds of verbal conditioned responses; he also compared the body sway suggestibility of three grades of defectives, the moron, imbeciles, and idiots. The results showed that intelligent level of the defectives are related to the ability to acquire and extinguish verbal conditioning responses and as the task became more complex, the difference in ability between morons, imbeciles and idiots became conspicuous.

Deb (1964) compared the immediate memory span of 10 brain injured and 10 familial retardates, and found that the brain injured who had definite impairment in cortical conductivity, showed lack of acquisition of object series in comparison to those familials who did not apparently suffer from any such lesion.

A sizable amount of research by Indians has been conducted abroad. In one investigation conducted at the George Pea Body College for Teachers, Canada, Das (1965) studied the effects of evaluative verbal labels on discrimination learning. The sample consisted of 30 normal (IQ = 115, CA=17) and 30 institutionalised retardates (IQ=50, CA=22); the results showed that retardates were more sensitive than normals to evaluative verbal stimuli like 'good' and 'bad'. In another study, Das (1965) compared retardates with normals in a two-choice probability learning task.

A number of investigations had been carried out by Sen, A.K. and Sen, A., at the University of Hull; the studies involved 'trace inaccessibility' in severely retarded adults (Sen and Sen, 1967a), serial verbal learning and retention in mental retardates (Sen and Sen, 1968a), McCrary-Hunter hypothesis in retarded subjects (Sen and Sen, 1968b), Von-Restorff phenomenonin the retarded (Sen *et al.*, 1968), Distractibility in the subnormal (Sen and Clarke, 1968 a and b), among others.

Sen, A.K. (1966) conducted a couple of experiments to study the effect of stimulus length and display time in short-term memory among imbeciles. The first experiment demonstrated the effects of practice and contextual associations, whereas the second experiment dealt with optimum rate of presentation. Due to limited input capacity faster rates resulted in poorer recall, while slower rates showed no further gain. Sen, A. (1966) studied the effect of meaningful auditory distraction on a sorting task in imbeciles. Out of the 16 subjects tested, four were distracted both in terms of score and time while seven other subjects also showed distractibility either in terms of score, error or time.

Sen and Sen (1967a) conducted a study to demonstrate trace inaccessibility in memory in a group of severely subnormal adults and found that subjects who showed this type of behaviour, made comparatively more intrusion errors in a serial recall task than controls who made more omission errors.

In another study Sen and Sen (1967b) compared long-term retention of two groups of retardates having different intelligence levels, and found them to differ significantly. The results indicated that it took an average of 21.94 trials for the low MA group as compared to 13.12 trials taken by the high MA group to learn a series of the names of outline drawings of stimulus items.

Sen and Sen (1968a) studied the McCrary and Hunter hypothesis under different treatment conditions. The results showed that errors made in most of the serial positions by the two groups studied, were significantly different when absolute numbers of errors were considered; but no significant difference between the groups was observed when percentages of errors were considered.

Sen and Sen (1968b) studied the phenomenon of free recall as a function of exposure time and identified some important factors in memory, and found that the learning difficulty in the severely subnormal could be partly overcome by manipulating the rate of presentation.

Sen *et al.* (1968) demonstrated the applicability of the Von-Restorff phenomenon in a sample of 16 adult retardates. The three experiments conducted, were to determine the following:

1. the effect of serial learning of two fully coloured pictures, centrally placed, in a list otherwise composed of black outline drawings,
2. the effect of position of fully coloured isolated items, peripherally placed on a list and,
3. the effect of reducing the degree of isolation by using red outline drawings instead of fully coloured pictures, centrally placed, in a list otherwise composed of black outline drawings.

Analysis of results showed that subjects made significantly fewer errors in every case where the item was isolated. This effect was greatest when fully coloured pictures occupied a central position. These results suggested that the quantum of isolation effect is a function of the nature of the isolated items.

Mohan and Sethi (1968) found that the retarded scored higher on extraversion and lower on neuroticism scales; in another study Mohan *et al.* (1981) reported extraversion in retarded as being higher compared to normals.

Sen and Clarke (1968a) aimed to investigate the interaction of tasks and different kinds of potentially distracting extraneous stimuli. Two picture naming tasks were chosen (one easy and one difficult) and five inter-linked experiments were conducted. These were aimed to show the effects of different distractors on tasks requiring verbal responses on the part of retarded subjects of two verbal IQ levels. Background noise and conversation were found to be ineffective as distractors while in certain circumstances meaningful and meaningless words disrupted performance. Significant relation was demonstrated between level of task difficulty and susceptibility of subject to distraction.

Sen and Clarke (1968b) tested the hypothesis that during learning of a task subjects could be susceptible to distractors, but they should become resistant to these, once the task is thoroughly learned; 18 adult retardates were selected on the basis of CA, MA, and learning ability determined by cumulative score on four trials. They were divided in two equal groups of nine subjects each, matched on these variables. The mean CA and Mean MA for the control group was 25.5 years and 9.2 years, and that for the experimental group was 23.5 years and 9.1 years respectively. The stimuli consisted of black outline drawing of eight common objects. The control group was required to learn the list of pictures to a criterion of three consecutive errorless reproductions under normal condition, while the experimental group learned the same list to the same criterion of mastery in a distraction condition. Distraction consisted of presenting through ear phones 16 common words. The experimenters obtained a highly significant difference in the number of trials required to reach criterion of mastery between the control and the experimental groups. Further analysis revealed that there was a relation between task difficulty and susceptibility to distraction. The authors also found that once the task was adequately learned and slightly over-learned, the same distractors were ineffective. These experiments thus indicated that so far as verbal tasks were concerned, there was a consistent relationship between level of task difficulty and susceptibility to influence of certain distracting extraneous stimuli.

Sen and Sen (1969) in an experiment determined the effect of degree of prior learning on subsequent learning in a paired ssociate task. It was found that even for retarded adults a ositive transfer operated when the list presented, had the same timuli but different response items. Sen the Patnaik (1973) lso substantiated these findings.

Das (1969) studied the development of verbal abilities in etarded and normal children as measured by Stroop Test. He ound that retardates could name colours faster than reading vords, and relatively less interference was observed for them han normals in naming the colours of words, moreover they vere observed to function like the normal children at grade I level.

In a study Mukherjee (1970) observed that the retarded child is psychologically quite rigid. Prabhu (1970) studied the personality characteristics of parents who overestimated the potentialities of their retarded offspring and found that over-estimators were neurotic and had greater extraversion. Mohan (1972) indicated that the retarded and gifted were similar to each other in that they both scored well on persistence test as compared to normal controls. Those subjects who were high on neuroticism and extraversion, but low on intelligence, had the highest level of persistence.

Shukla and Khoche (1974) studied male mental retardates and compared them with 50 normal adolescents matched for chronological age and socio-economic status. The results of the Bell's adjustment inventory revealed that mentally retarded adolescents were severely maladjusted in the home, health, social and emotional areas in particular, and overall adjustment in general. Shastri and Mishra (1974) assessed the social functioning of the retarded on the basis of certain criteria, such as Interaction, Communication, Self-responsibility and level of impairment.

Bhalla and Sen (1975) studied the transfer of training in retarded and normal children in a sample of three groups of 10 mentally retarded children in the age range of 14 to 16 years, and IQ=50-60 and a group of 10 normal children who served as control group. The results showed that transfer occurred in the mentally retardates, but the effect is more prominent in normal subjects than in retardates; when equated on M.A., the performance of the normal group was also better than the retarded group.

Nagpal (1979) differentiated a group of mentally retarded subjects into first-session learners (N=8) and latent learners (N=13) in a discrimination acquisition task. Both the groups had, however, similar CA, mean Form Board MA, Mean Standford-Binet MA, and IQ. Personality protocols of these two groups were explored by applying Holtzman Inkblot technique. The latent learners were characterised by very quick reaction time, lower "reality contact", greater pathognomy, prone to be energized by fantasies, and lagging in cognitive-emotional development. The first session learner group was found to possess relatively strong intellectual control over the emotional demands, more balanced ego organisation, resulting in a harmonic co-existence of fantasies and ego-control. It was speculated that punishment procedure (introduced by return of one two-paise coin for every error made, in the experiments) was activating the ego-controls of the latent learners, by checking the overwhelming conditions before they could devastate the performance, and thus facilitated their performance. First-session learners, on the other hand, possessing stronger intellectual control over the emotional stimulation engendered on knowing about the prospect of winning money, could not be distracted as much, and maintained a superlative performance.

Sen (1979) discussed the scope of prevention of mental retardation in Indian context. She also critically examined different aspects of welfare measures for the retarded (Sen, A. 1976, 1979b, 1980a, 1980b, 1980c, 1981, 1981c, 1986a, 1987b, 1987c) in various contexts. In a lead paper Sen, A. (1981c) analysed the Indian situation in the context of education and care of the mentally handicapped.

In a series of experiments, Sen, A. (1981b) examined the relationship of age, duration and complexity of training task in the context of effectiveness of transfer for training among the retarded children and adults. The results indicated that all the variables under examination are equally important for consideration, for bringing in maximum benefit of transfer effect.

In a study on adjustment problems, Mohan *et al*. (1981) selected 51 mentally retarded boys from regular and special schools, and compared their scores on the Eysenck's personality inventory with that of a control group of normal boys, and found that the mentally retarded scored higher on neuroticism. The investigators hypothesised that a higher score on neuroticism indicates social isolation, rejection, stigma and rebellion; they also maintained that family stress increased with repeated failure and frustrations.

Gunthey and Upadhyaya (1982) studied adaptive behaviour in retarded and non-retarded children; 61 mentally retarded delinquent, economically disadvantaged and normal 7 to 13 years old were administered two intelligence tests and an adaptive behaviour scale. Mentally retarded subjects had significantly lower adaptative and higher maladaptive behaviour scores than subjects in the other three groups. Delinquent and disadvantaged subjects' IQs and adaptive behaviour scores were lower than normal, but higher than those of retardates.

Prakash *et al.* (1985) studied some personality disposition of mentally retarded children. Two groups of 50 normal and 50 retarded children in the age group of 10 to 12 matched as far as possible with regard to socio-economic strata of parents, comprised the sample of study. Personality disposition were measured by the Personality Assessment Questionnaire (PAQ). The dispositions assessed by PAQ are dependency, instability, world view, hostility, self esteem and emotional responsiveness. The results showed that the scores of mentally retarded children in all the six personality variables were poorer than the normal subjects.

In a different context, Sen (1986b) determined the relationship between inspection time and intelligence in a series of experiments using mentally retarded subjects. The studies evinced a similarity of the relationship between intelligence test score and information processing speed and inspection time in the retarded population, as observed with the normal population earlier (Sen, 1984). In a recent paper Sen (1987b) discussed the role of nutrition in the development of human brain.

IV. Ecological Studies

Most of the work on Mental Retardation in India has stressed on this aspect, some of the studies are being reported here.

Damle (1952) explored the background of physical and mental conditions of the mothers during pregnancy and at child birth as well as their food intake during pregnancy. A group of children (age range 6 to 18 years) with IQs below 78, were selected from among those referred to the child guidance clinic of the Tata Institute of Social Science for Behavioural Research, at Bombay. The conclusion made by him was that parents generally need more knowledge and information regarding the treatment and care of their mentally deficient children.

Deb (1962) basing his research on 156 adolescent imbeciles, determined discrimination limens for them. Deb and Ghose (1962) studied a group of moderately mentally retarded and found cultural background played a role in the acquisition of culture biased objects.

Kuppuswami (1968) opined that the parents of the upper and upper-middle socio-economic class realise the futility of sending their retarded children to the normal school. He made a survey of mental retardation among middle school children in Mysore and observed that larger number of retardates came from lower socio-economic strata.

Mishra *et al.* (1976) observed that males were relatively more prone towards mental retardation; they also found that the guardian's low economic status and backwardness are associated with mental retardation up to profound level. In this study a sample of 118 cases of institutionalized mentally retarded children was taken to determine the relationship of some economic factors associated with mental retardation. A detailed case study schedule developed by the investigator was used. Results showed a close relationship between mental retardation and factors undertaken for study. In cases of 'only father earning' figures and 'no earning' figure, there was a high percentage of profound retardation, 5.93 per cent and 3.31 per cent respectively. It was also reported that due to guardian's low economic status and backwardness, there would be more chances of retardation of different categories.

Rajalakshmi (1968) compared the psychological status of under-privileged children reared at home and in an orphanage.

Both the groups were found to show poor word concept developments and had lower scores on the *Leiter International Performance Scales*; the orphanage reared children faring worse than the home reared children. Children receiving a high protein supplement were found to be no better than those receiving an iso-calorie carbohydrate supplement. Results show that nutritional improvement cannot restore normal psychological function in children, whose social and cultural environment do not provide a certain minimum level of psychological stimulation.

Das (1968b) observed that in Western countries, the low socio-economic groups have some associative factors like lack of stimulating environment and verbal interaction giving rise to cultural deprivation in adults. In India, he observed that caste also is an important factor in addition to economic status in defining cultural deprivation; birth in a higher caste may even compensate for poverty. However, the relationship between mental retardation, cultural deprivation, poverty and caste is never so simple and calls for further research to unearth the basic relationship.

Sen and Gururani (under publication) in a recent study conducted in Delhi, found that in an institutional setup, no extra effort was being made by the staff members to train the mentally retarded children, even though they might be capable of learning of at least some skills. Moreover, retarded children of various levels were made to live together, and were being measured by the same rod. The sample consisted of 20 institutionalised and 20 normal children, in the age range of 7-12 years. The subjects belonged to the mildly retarded group of same SES as that of the normal. An adapted version of AAMD Adaptive Behaviour Scale was used along with a dietary survey, and recording of anthropometric measures for each group of subjects.

In an institution, though the child's physical demands are met, equally important, if not more, the psychological needs that can be provided at home, was missing. It was also observed that children growing up in poor institutions, often failed to develop normal pattern of social responsiveness; they tended to become withdrawn and apathetic, and very frequently they did not develop normal patterns of social behaviour. There appeared to be a direct relationship between the extent of intellectual and language retardation and the degree of sensory and visual stimulation, in the institutional environment.

The institutionalised children were found to be lacking in personal independent behaviour, and displayed more maladaptive personal and social behaviour, as compared to their non-institutionalised and normal peers. Since the task of training mentally retarded children is very tedious, time consuming and quite difficult, the study undertaken supported smaller and more family based institutions wherein both dedicated and trained teachers and parents could take up the task of teaching the basic behaviour adaptive skills to the mentally handicapped children.

Results of Dietary Survey also indicated that institutionalised children were consuming far less calories and protein as compared to their non-institutionalised and normal peers; and further evidence in this direction was provided by their physical stature, as indicated through anthropometric measures. Moreover, a low protein diet was also found to be associated with the impairment in psychological performances.

In the context of the participation of the parents in the services for the retarded, Prabhu (1968) observed that a large majority of parents lack an appropriate idea about their childs' potentialities; these parents lack also the knowledge about need for proper evaluation of the assets and deficits of their child. There are several ways by which parents can take an active role in the programme for the retarded and some of them can be more satisfying like that of starting a school for the mentally retarded, and forming associations where they can meet and discuss the problems that come up to them; and thus with their previous experience guide the new cases to a fruitful solution.

Gandhi and Cheena (1969) aimed at studying the attitudes of the mentally retarded towards what they were doing and the attitudes of parents towards their children's occupation. They selected 13 mentally retarded boys in the age range of 13 to 23 years (mental age was 5 to 12 years and IQ range 40 to 75).

Teja *et al*. (1971) observed a preponderance of males in the mental clinic population. They also studied the background factors in 200 mentally retarded and 200 emotionally disturbed children and found mental retardation to be more common in rural areas, and is associated more with family history of mental retardation, and with organic psychosis. However, it was associated negatively with age, income, sibling rivalry, neurotic traits and family history of neurosis.

Kumar (1971) studied 364 boys and 328 girls and found that the self-concept of males was inversely proportional to intelligence in contrast to females whose decreasing level of intelligence was directly related to self-concept. The result of the study appears to be intriguing and inconclusive as the interacting variables involved were too many.

Das and Ola (1972) studied the biographical characteristics and socio-economic status of children below 100/IQ. They examined the home environment in the context of child's intellectual growth and found that the first born had a slightly higher IQ than the later borns. IQ showed a consistent increment from the lowest to the highest SES levels; stable homes have higher SES than broken homes. In low SES the regular class children had higher level of IQ than those from the special class.

Banerjee *et al.* (1973) have stressed the importance of a growth producing environment and have supported the assumption that mentally retarded children can grow and develop in an environment specially designed to help them. Jain (1972) found that there was a high relationship between family density and retardation; spacing between births and birth order too were found to have some relationship with retardation.

Char (1972) while discussing the state of primary education for mentally retarded children, observed that since the ultimate goals of education are the same for all children, that is, self-realisation, social competence, economic independence and civic responsibility, curriculum for the retarded child should be based on the ability of the child, parental expectation, available resources, and the time available. He also suggested that the curriculum for them should be planned to achieve maximum development in minimum time; and each child should have a separate curriculum and learn at his own rate and time.

Narayanan *et al.* (1973) studied 1,200 cases of mentally retarded who needed help and observed that clinical help was sought mainly in the case of those who were moderately or severely retarded. The consultation was usually sought when the child was 10 years old or even older which is somewhat late for the child, to be of much use. There was a preponderance of male subjects and the cases mainly came from families with an income of less than four hundred rupees per month. In addition most of the children had multiple handicaps.

Jachuck and Mohanty (1974) found that in the age groups of 8-10 years, subjects from high SES background showed better performance than the low SES subjects. Greater differences were noticed between groups at the older age level; thus supporting the cumulative deficit hypothesis by showing that the cognitive skill of the low socio-economic status child begins its developmental process later than the high SES child.

Kishwar and Chandra (1975) compared moderately retarded and normal children of age ranging from 6 to 10 years, and observed that intellectual handicap could owe its genesis to the lack of proper motivation and emotional stresses and strains, both inside and outside home. Biswas (1975) has reported a study of 75 mentally retarded children reporting that the maximum number of retardates were first born ones, the second largest number were those born second. Thus, first and second born ones together made up 60 per cent of this sample.

Kishwar (1976) studied a group of 300 normal and moderately retarded children from Lucknow and found that broken homes, brutal discipline, low SES and faulty relationship with parents may contribute to mental retardation. Murari and Sinha (1978) interviewed 50 mentally deficient children from two schools, and concluded that cultural factors had an effect on the identification of retardation.

DeSousa and DeSousa (1978) evaluated the cases of pseudo-mental retardation comprising of all those children who were in practice 'normal', but appeared to be retarded on clinical assessment or on psychological testing. The main cause was suggested to be marked emotional disturbances due to a defective environment, such as maternal deprivation; underprivileged psychotics and neurotics may have also come under this category.

Nanda (1978) conducted an exploratory study of 250 children (2-18 year old) diagnosed as mentally subnormal at the child guidance clinic, New Delhi. The variables studied were parental age, economic condition, sex, birth anoxia, convulsions, ordinal position, family history of mental subnormality and modes of delivery. It was concluded that biological and external factors have equal effects on mental subnormality. Thus correction of adverse social, economic and cultural conditions could reduce or prevent the problem of retardation to some extent.

Bevli (1978) reported a study comparing the urban advantaged group, the urban disadvantaged group and rural disadvantaged group, in terms of cognitive development. Children of the urban advantaged group were found to have more material benefits in the form of books, toys, magazines and excursions. They had a variety of experiences, their parents were less restrictive and more democratic and their level of interaction with the children and the language used, were of better quality. In contrast to these, the urban disadvantaged group (sample drawn from Corporation schools) had parents of educational status not more than 10th class. Their children were not allowed such initiative; they were rather expected to show obedience to authority which is liable to lead to lessening of curiosity and independence. There was acute shortage of living and play space and lack of toys and books (because of limited resources), thus depriving the children from such manipulative activities and experiences.

Kishwar and Kamal (1981) in an analysis of the social climate of mentally retarded subjects found that broken homes, neglect on the part of the parents, malnutrition, infectious diseases, may affect the mental, emotional and physical growth of these children.

Jehan and Ansari (1981) found poverty, family income and acceptance and education of parents play an important role in occurrence of mental retardation. In their study on 200 mentally retarded children up to five years old, they found that 85 per cent were from lower socio-economic status.

Behere and Tripathi (1981) studied socio-economic, demographic and clinical characteristics and reported that 55 per cent of the parents attending a child guidance clinic had mental retardation without any associated problem, while 19.2 per cent had associated hyperkinetic behaviour disorder, 14.2 per cent had associated epilepsy, while only 11.6 per cent had both epilepsy and hyper-kinetic behaviour disorder with mental retardation. In this study it was found that 65.8 per cent of the patients were directly brought to the child guidance clinic, contrary to Verma *et al.*'s (1976) finding; a high clinic drop out pattern was also noticed.

Kohli (1981) discussed incidence of disability in India, meaning of disability, and mental retardation as a form of disability. It was observed that given an accepting and adequately stimulating family environment and appropriate vocational training facilities, the majority of retarded children can develop good social and vocational adjustment and capacity for appropriate inter-personal interactions and attachments. However, in the process, they face hazards along the way that exceed the ones facing the normal population; such problems seem to increase in direct proportion to the degree of retardation.

Chaturvedi and Malhotra (1982) analysed the treatment seeking behaviour of parents of mentally retarded children. Parents of 30 children attending a mental retardation clinic were followed up after one year and were administered a semi-structured interview to ascertain their treatment seeking patterns. Help was more often sought by parents who had higher education and by those from a rural background with a high socio-economic status. Perception of illness did not significantly affect treatment seeking behaviour. Younger children, female retardates, children in whom symptoms showed earlier, children with severe and profound retardation, and children with associated psychiatric and organic problems were more often taken for treatment.

Singh and Dagar (1982) analysed the records of 332 children with primary behaviour problems to determine SES correlates of scholastic problems, speech and conduct disorders, delinquent behaviour, neurotic and psychotic reactions. The results revealed that family structure, parental education, economic status, and employment of mother among other, influence behaviour. It has been argued that parents of low SES tend to seek solutions to their children's emotional problems in terms of somatic disturbance, and are not conscious of their emotional and mental development, as compared with parents of high SES.

Sheshadri *et al.* (1983) found that the child's degree of retardation was not significantly related to attitude or marital adjustment. However, keeping in mind the fact that some mothers tend to be favourably inclined towards their retarded child, a significant correlation was obtained between maternal attitude and education.

In a comparative study between retarded and normal children, Sen (1986a) observed that home environment was one of the major psycho-social concomitants of mild mental retardation. There was a significant difference between the two groups in terms of parental aspiration, SES, exposure to mass media and food, nutrition and health, in favour of normal children.

Sen (1986a) also compared two different dimensions of parenting (Negative and Positive) between the two groups, through multi-dimensional parenting scale. Normal children were found to be significantly better off in terms of positive parenting, such as love, encouragement, acceptance, progressivism, democratisation and independence. An opposite trend (though not significant) was noticed for the retarded group, in the negative dimension, such as autocracy, discouragement and dependency.

Sen (1986a) also found that mothers' low intelligence status was an important factor in relation to the occurrence of mental retardation. Thus, overall, home environment, dimensions of parenting and mother's intellectual status were found to have a direct bearing on the causation of, at least mild degree of mental retardation.

(V) Some Studies on Malnutrition

Malnutrition has now become a research area of main concern in most developing countries. Investigations have reported that in India child population is about 225 million, out of which nearly 100 million belong to the deprived category and 65 million children are estimated to be malnourished. Gopalan

(1975) has indicated that in rural India, 85 per cent of the pre-school children suffer from varying degrees of growth retardation.

Champakam *et al.* (1968) assessed IQs of 19 severely malnourished children between 8 and 11 years of age, several years after they had recovered from malnutrition. Younger malnourished children were found to show poorer performance, while the difference tended to diminish for older children. The largest difference was identified on tests of perceptual and abstract abilities.

Any study of malnutrition is essentially an ecological study; and poverty, illiteracy, child rearing practices, family characteristics, social relations, socio-economic status are all connected with the nutritional status of a child. Khandekar and Kini (1971) have pointed out that social factors are important in explaining a child's nutritional status and his social behaviour. In a study of 1,576 children of economically disadvantaged group in Greater Bombay, they found that the size of the household, income, parents' educational status and fathers' occupation are significantly related to PCM (protein-calorie-malnutrition), vitamin A deficiency and riboflavin deficiency, which are of crucial importance for learning and development of social competence.

Pasricha *et al.* (1972) enquired into the relationship of parental education and IQ, with IQ of their offspring in a group of 33 malnourished children, with various degrees of malnutrition. Parental IQ and level of education were recorded; correlations of these factors were determined with the IQ of the children and these were generally found to be rather low.

Bailure (1972) reviewed the nutrition and dietary survey of pre-school children conducted by the Indian Council of Medical Research (ICMR) at Bombay, Calcutta, Delhi, Hyderabad, Poona and Vellore. The results indicated that while 35 per cent of the children did not get adequate protein in their diet, 92 per cent did not get adequate calories; the former 35 per cent also had an inadequate calorie intake.

Parekh (1973) found that the greater the deficit in height and weight in later childhood, the more was the IQ deficit in malnourished children. Murthy (1974) reviewed literature (mainly in the context of Indian research) on the relationship between retardation and malnutrition; the studies indicated a causal link. Patel *et al.* (1974) studied the impact of the total milieu surrounding malnutrition and reported deficiencies in intersensory integration for chronically undernourished children. Ghai (1975) observed specific deficits in visual haptic and visual-kinesthetic sensory integration for malnourished children.

Among the indices of malnutrition, stunting is accepted as the best measure of malnutrition. Easwaran *et al.* (1974) in a study of height-weight measurement of 7, 8 and 9 years old 2,208 children from 11 schools of Coimbatore city, found that the boys and the girls in the highest income group (above Rs. 600 at that time) were tallest and heaviest. The study also indicated a relationship between income and quality and amount of food available to the family. Easwaran *et al.* (1976) also found PCM affected scholastic achievement of children. Unbalanced diets, unhygienically prepared food, lack of cleanliness, untidy surroundings, lack of timely medicare are some of the factors that lead to recurrent infections and chronic diseases. Cumulative nutritional deprivation, like severe malnutrition may interfere with optimal development of cognitive functioning and may have severe implications for learning in later years.

Venkatachalam (1975) in a paper entitled 'Physical and Psychological Growth of Malnourished Children', reported the consequences of malnutrition for those under 36 months of age; and he found not only retarded physical growth but also learning disabilities. Thus it seems that not only general environmental factors, but early malnutrition as well, are related to depressed academic performance. Gupta *et al.* (1975) examined the level of malnutrition in terms of its effects on performance in intelligence tests in a large sample between ages 5 and 8; and he observed a monotonic decreasing relationship between the degree of malnutrition and Stanford-Binet IQ.

Singh *et al.* (1976) studied the impact of nutrition on intelligence which revealed that well nourished children performed better, and had higher mean IQs as compared to the group of malnourished children. Severity of malnutrition was also found to be related to the performance of children on the Binet test of intelligence. The more severe the malnutrition, the poorer the performance and hence lower the IQ. Singh *et al.* (1976) also studied intelligence in relation to duration of protein calorie malnutrition (PCM), and reported that in each socio-economic class, children with normal nutrition were more intelligent than the sub-clinical group (on the basis of modified Gomez classification). They reported not only the severe forms of malnutrition (known as marasmus and kwashiorker) but also the milder forms, like sub-clinical and grade-c malnutrition and its impact on intellectual functioning of the children.

About a decade ago Das and Pivato (1976) observed that as far as income was concerned, the families in which clinical malnutrition had occurred, had an income around Rs. 200 p.m. He also estimated that a family of three would have needed Rs. 800 in groceries for proper nutritional value, which was four times more than the total income of the family (at the price level existing that time). Dr. Gopalan (1977), the then Director General of ICMR, also expressed his concern over the prevalence of diseases caused by malnutrition and under-nutrition. He also pointed out that there would be very little malnutrition, if all the food available in the country could be equitably distributed in accordance with physiological needs. A study undertaken by the National Institute of Nutrition, Hyderabad, covering over 15,000 households, spread over nine States, indicated that the per capita income was less than one rupee a day in over 40 per cent of the rural households. On the other hand, the least expensive balanced diet worked out by the Institute, would have cost that time about Rs. 1.80 daily on the basis of the then existing food prices. It was pointed out that the lasting improvement of the nutritional status of poor communities cannot be achieved through nutritional programme alone, but through an overall rural development and improvement of the standard of living of rural population.

Singh *et al.* (1977) conducted another study on the scholastic performance in relation to PCM on 204 male school-going children aged between 5 and 9 years, randomly selected from a few corporation schools and a public school of Delhi. Body weights of these children were taken as the index of nutritional status. Scholastic performance was assessed on two criteria: (*i*) teacher's grading on the basis of day to day assessment of the child in the class, and (*ii*) the child's final examination marks. The sample was broadly classified into well-nourished and malnourished groups taking the ICMR growth and development norms as reference standards. The two groups were compared with eath other both for the teacher's rating and the marks obtained. The study revealed it is not only the intellectual potentials, but "intelligence at work" measured in terms of scholastic performance, that is affected by the nutritional status. Nourished children showed superior learning capacity than malnourished children. Children suffering from even the milder forms of malnutrition, had changes in their mental functions which may be responsible for their failure to profit from the school exposure.

Devadas and Jeya (1978) reported a study conducted over a period of four years on the school attendance and academic performance of some children malnourished earlier in their life. The study showed that the school attendance and academic performance of these children was lower than their siblings. The academic achievement of those children malnourished earlier had a difference of about 18 points from that of their siblings in the corresponding chronological years.

Gupta *et al.* (1978) attempted a study on anthropometric measurements in the field of mental retardation. Two groups of 30 institutionalized mentally retarded and 30 normal adults were taken. Since the mean chronological age was similar, the two samples were compared for their development and patterns of growth on the following eleven measurements—head length, head breadth, head circumference, cephalic index, height stature, trunk size, shoulder breadth, hip breadth, foot length, arm length and leg length. Data were analysed in terms of *t* test and correlational coefficients. The results showed that (*i*) mentally retarded on an average, tend to be significantly shorter on all variables except in the growth in their foot length, and (*ii*) their whole pattern of growth is likely to be different from that of normals.

Sen, A.K. (1981) in a review of the care, prevention and assessment of mental retardation in India, laid particular emphasis on the importance of maintaining a well-balanced diet, vaccinations against diseases and medical supervision. Sen, A. (1987b) also discussed the role of nutrition on human development.

The review of studies on nutrition or malnutrition thus highlighted that malnutrition experienced during the developing years has the physiological effect of stunting physical body growth as well as the brain structures. Furthermore, malnutrition has the functional effect of eliciting non-adaptive responses, lack of discrimination, lowered intellectual performance and retarded cognitive development.

The literacy percentage in India is very low, most of the retarded live in the community even without being identified as retarded. Respective families consider it a problem only when it is a severe case and then they seek help form outside agencies for management. The number of such organisations is also lamentably inadequate in India. The literacy rate has significantly improved since Independence in 1947, from 17 per cent to more than 42 per cent (excluding children below five years of age); but the sheer number of illiterate persons has increased from about 100 million to 437 million. The World Bank has already estimated that by the end of this century India will have the largest illiterate population in the world.

The unholy trinity of illiteracy, malnutrition and poverty contribute to disadvantages in the intellectual and social development of the growing child in the rural areas (Muthayya, 1976). Poverty also forces the offspring of the poor to have very limited sphere of experiences. In a contemporary study on some psychological characteristics of class IV employees, Sen *et al*. (1983) found that a sample of 45 Delhi University male adults belonging to low socio-economic group, faired quite low on Raven's Progressive Matrices (RPM) Test. The mean raw score was around 24 only which indicated that subjects definitely belonged to below average in their intellectual capacity.

In a recent study, Sen, A. (1986a) compared nutritional status of both normal and retarded children in rural setup as measured by food intake and some anthropometric measurements. Nutritional status of both the groups was found to be considerably poor. In terms of nutrient intake, both the groups fell below the recommended standard in ICMR food composition Table (Gopalan *et al.*, 1982) giving daily allowance of calories, protein, calcium, iron, vitamin A and B (compound), thiamine and reboflavin. However, all the nutrient intakes were found to be relatively higher (though not significantly so, except for iron) in the normal group. The anthropometric measurements revealed that the retarded had significantly poorer physical development compared to the normal group in terms of head circumference, height vertex, sitting height, arm circumference, total body weight, and arm/head circumference index. Severe protein calorie malnutrition was found to be present in 14.94 per cent of the retarded group as against 5.14 per cent in the normal group. Thus malnutrition was noted to be quite prevalent among all the rural children studied, irrespective of their intellectual status; and the retarded shared their part of malnutrition relatively more than their normal peers, though malnutrition could not be definitely associated with mental retardation.

As suggested by Muthayya (1976), a programme, oriented to improvement of the nutritional and health conditions of every household, development of better and more educational opportunities for rural children and control of birth rate in rural families particularly in lower socio-economic strata, would be some of the right perspectives. Often the disadvantages of the rural child, when compared with his urban peer, seems to be insurmountable. The need for enriching the environment of poor children had also been highlighted by Shanmugam in his presidential address in the IPA Golden Jubilee Conference on 'The Disadvantaged Child' held in Madras on 9th October, 1976. The conference made specific recommendations for providing extra facilities which were meant to compensate for the improvised environment of the children. Implementation of those recommendations though was no so easy, yet it would have amounted to a precautionary measure against increase in the incidence of mental retardation, along with other adverse social problems.

AETIOLOGY OF MENTAL RETARDATION

So far as aetiological aspects of mental retardation are concerned, two major divisions of cases have been identified: those which are pathological in origin and those for which no specific cause could be labelled—conventionally known as subcultural types. The subcultural type, as opposed to pathological one, is regarded as representing the lower end of the normal variations in intelligence.

The pathological type of mental deficiency has been conveniently divided into those which are genetically determined and those which are environmentally determined; though these two causal agencies are not necessarily mutually exclusive. Mental deficiency of specific genetical origin may again be due to harmful genes (some examples are Epiloia, Crouzon's disease, Phenylketonuria, Galactosaemia, Amauratic idiocy, Gargoylism, Cretinism, Microcephaly and Hydrocephaly) or due to conditions of aberrant chromosomes (some examples are Mongolism (Down's syndrome), Patau's syndrome, Edward's syndrome, the Triple X conditions, etc.).

Environmental events leading to pathological types of mental retardation can occur before, during or after birth. Some examples of pre-natal causes are congenital syphills, rubella, irradiation, Rhesus-incompatibility. Natal causes are birth injury of various types; and post-natal causes are tuberculous, meningitis, whooping cough, encephalopathy, lead poisoning, head injury, acute dehydration and others.

Occasionally retardation in intellectual development, in the absence of biological pathology, has been observed. Persons belonging to such a category are labelled as 'cultural-familial' retardates. It is generally recognised that lower the level of intelligence, the more likely it is that the person is suffering from a pathological condition. So far as mild retardation is concerned, socio-cultural deprivation seems to be one of the major causes.

PREVENTION OF MENTAL RETARDATION

Techniques for primary prevention of all known pathological conditions leading to mental retardation are by no means complete. Nevertheless, quite a few pathological conditions to date are known to be amenable to preventive measures, some of which would be applicable by and large, in Indian settings as well.

Avoidance of Late Pregnancy

It has been calculated that if no children were born after maternal age of 35, the incidence of Down's syndrome would have been halved. This preventive measure as such, is not an expensive one; it needs proper counselling and education of the parents. Early completion of families would thus be a prerequisite. The marriageable age for girls has been raised to 18 years already in India. This would imply that the raising of family may be completed around the maternal age of 30 or so with appropriate spacing between two or three children. Parents need to be dissuaded from having children after maternal age of 35.

Genetic Counselling

This is becoming increasingly known in the Western countries. Linked with this is the possibility of pre-natal detection of Down's syndrome through aminocentesis; if the diagnosis is positive, medical termination of pregnancy would be desirable. Similarly Rubella vaccination might have a significant impact in reducing the number of severely handicapped children who would be born.

These measures, however, cannot straightway be implemented in India today at a national level, because of sophistication of techniques involved as also the expenditure. There is, however, a distinct possibility of their use in the future. Whenever a congenial situation exists, this facility can be started, at least in some big cities, on experimental basis.

Immunisation Programme

The increased use of immunisation techniques for the common childhood illness such as measles, mumps and whooping cough which might have neurological consequences, would also have a significant impact in reducing incidence of pathological conditions. Clarke and Clarke (1974) have reported that a method of immunising rhesus-negative mothers has been developed to prevent Rh sensitisation by rhesus-positive foetuses, thus protecting subsequent pregnancies.

India has been successful in complete eradication of some dreadful diseases like small pox with the help of WHO. Other immunisation facilities may also be brought into effect. Compulsory testing of blood group of the child at birth may also be effected.

Proper Health Care

Better ante-natal and obstetric care would have an impact on the incidence of mental retardation. Regular medical check-up with the onset of pregnancy along with the provision of milk and other nutrients like multi-vitamins may be made for those who cannot afford themselves; and this would be a national investment in the long run.

Control of Obstetric Complications

Several studies have shown that severe complications of labour and delivery appear to be associated with neurological defects, which in turn may cause mental retardation. Kaplan (1972) found a correlation between obstetric complications and the nutrition of the mother in her own childhood. Better nutrition in childhood, therefore, will diminish these obstetric complications.

In India the hospital facilities for child delivery are not so readily available in rural areas. Care should be taken that if hospitalisation is not possible, services of trained personnel is made available during the birth of each child even in the most remote part of India.

Evidence of Consanguinity

Consanguineous marriages are common in some communities. A study conducted by Narayanan *et al.* (1973) had indicated that parental consanguinity is liable to produce mental retardation in the offspring. However, it needs to be corroborated by further research. Incidentally, a contemporary lecture by Dr. Welinski from Poland pointed out a high infantile mortality rate due to in-breeding in comparison to cross-breeding. If it is proved beyond doubt that retardation is caused by marriages of closely related individuals, a law needs to be acted as suggested by Justice Hedge (1977) prohibiting marriages within certain degrees of blood relationship. Until such time at least counselling of individuals in certain communities, could be started against those traditionally sanctioned preferential pattern of marital relationship between close relatives.

Appropriate Nutrition

Poor nutrition whether during the reproductive cycle or after birth, can impair intelligence sometimes by causing irreversible effect upon brain growth and behaviour. Kaplan (1972) commented that although a causal connection has not been directly demonstrated, malnutrition is a contributing factor in the incidence of mental retardation. Das and Pivato (1976) also discussed the effect of protein-calorie-malnutrition (PCM); they pointed out that even when adequate protein is available in the child's diet, it may not be readily absorbed. The cultural peculiarities of a community might also indulge in producing malnutrition. Traditional food habits of the family or of a community, mother's intellectual level or educational background are also some of the important factors in this respect.

There are many communities in India who subsist on a strict vegetarian diet. Some rich community may have a low-protein diet while the poor from another subculture might take cheap food, rich in protein. However, as observed by Prabhu (1975), it cannot be said that incidence of intellectual backwardness is more common in the communities who live on low-protein vegetarian diet. The complexity of the relationship between malnutrition and mental retardation becomes apparent from Indian instances. Elsewhere, Clarke (1976) has also pointed out the difficulty of establishing the effect of malnutrition on man, as malnutrition being a part of a generally adverse situation, seldom exists in isolation. The unstimulating social context might also have a reflection on malnourishment. In general, poverty seems to be a constant companion of malnutrition. In fact, malnutrition is not an isolated biological phenomenon; but it occurs as a part of an on-going social process which affects the physical as well as intellectual development of the child. Almost all researchers have agreed that malnutrition arises from a common group of adverse social conditions including poverty, ignorance, poor hygienic conditions, over crowding, improper education, parasitic and communicable diseases, superstition and other factors that collectively or individually limit the availability and utilisation of nutrients by the organism. Both social and nutritional factors affect mental development not only independently, but also they interact very strongly. In cases where malnutrition is more common, a child cannot reach to his maximum genetic potential. Poor nutrition, inadequate health care, lack of stimulation and a general impoverished environment, are indeed deleterious for the cognitive development. Continuing deprivation, particularly at crucial points of development would institute damage which may run even in the succeeding generations. Das (see Das and Pivato, 1976) reported that as far as income goes, the families in which clinical malnutrition occurred, had an income around Rs. 200 per month (at the price level, existed that time).

Consideration of Ecological Factors

Das and Pivato (1976) commented that a study of malnutrition in any country is essentially an ecological study. The quality of the home environment, the individual qualities of the parents, the parents' own up-bringing, and the social context into which the child is born—are some of the pertinent factors. Richardson (1972) has listed some of the ecological factors and these are: mother's intellectual status and educational background, her attitude, her capabilities including verbal ability, child rearing practices, acceptance of new ideas and her aspiration for the child, family characteristics such as stability of the family, social relations between family, friends, and neighbours, the child's relationship with peer group, community and his activities in the school, etc.

One survey, conducted in England showed that incidence of mild retardation is significant among the social class V (see Clarke and Clarke, 1974). It appears to be particularly associated with a parent or parents of IQ below 80, in this group. Heber *et al.* (1968) started a programme aimed at preventing occurrence of expected mental retardation in children from this background.

It is interesting to note that most of the ecological factors are customarily discussed in the context of cultural deprivation. Some of the concomitants of cultural deprivation are assumed to be unstimulating environment, lack of verbal correspondence, poor sensory experience and low socio-economic conditions giving rise to poverty and other deleterious factors. According to Sinha (1976), poverty needs to be conceptualised in terms of the ecology of the poor, since inputs and stimuli emanating from the environment of the poor underlie the differentials in observed behaviour and general development.

Socio-Cultural Deprivation

Recent research has shown that mental retardation is not due solely to hereditary factors; rather it is determined in large part by the social environment. An abundance of research data indicates the significance of socio-cultural concomitants of mental retardation. Cultural deprivation, socio-economic status, nutrition and attitudes of the society, are some of the social aspects of mental retardation.

Broadly, as indicated above the concept of cultural deprivation encompasses unstimulating environment, lack of verbal correspondence, poor sensory experience and low socio-economic conditions giving rise to poverty and other deleterious environmental factors (Das, 1973) Research data show that cultural deprivation results in either producing or precipitating mental retardation. The urban-rural dimension has also been included in the context of cultural deprivation, with rural areas signifying an unstimulating environment with unhygienic conditions.

Reschly and Japson (1977) found that prevalence of mental retardation was significantly related to ethnicity and geographic locale (urban-rural residence). As stated earlier, according to Gopalan (1975). 85 per cent of the pre-school children in rural parts of India suffer from varying degrees of growth retardation. Das(1968b) has defined cultural deprivation as a complete set of conditions which fosters intellectual subnormality in a child. Some of these conditions are contributed by an unstimulating environment. Rajalakshmi (1968) found that children in an orphanage and home reared children in a village in South India showed poor word concept development on Leiter's International Performance Scale; the orphanage children did worse than the home-reared children. The backwardness of the children is believed to be due to the impoverished environment in which they live, aggravated by emotional deprivation as well, in the case of the children brought up in the orphanage.

Dalghish (1983) compared 19 pre-project and project residential units (as part of an evaluation of a new pattern of services for mentally retarded adults) in terms of physical environment, community involvement and management practices. Project units had better physical facilities than pre-project units, but this difference was not reflected in other measures of care. Persons with some severe handicaps lived in units that had less homelike environments, more institution oriented management practices, and less involvement with the community. But they scored less well than did less handicapped persons in less institution-oriented hostels. Results highlighted the scope for doing more than simply improving physical conditions, for improving the quality of life. An enrichment in the environment by way of increased involvement, was called for. Sen and Gururani (under publication) recently compared a group of institutionalised mild retarded with their non-institutionalised peers on adaptive behaviour skills and nutritional status. The latter group was found to be better in both the dimensions.

Semiawan (1981) discussed prevention and treatment of emotional deprivation within the framework of the development of human behaviour and demonstrated that an invitational environment could treat and prevent emotional deprivation.

The results of her study on 106 children including mentally retarded, physically handicapped and maladjusted, showed, that emotional and social deprivation are some of the main variables affecting the psychological development of the child.

Eggert (1982) reviewed a number of studies and suggested that mental retardation from the psychological perspective represents a multiple handicap in which cognitive impairments, speech disorders, motor impairments and behavioural disturbances are associated with the social and psychological structures and situations of the affected families. Among other factors influencing the social situations are (*i*) the handicap and its influence on the child's life course, (*ii*) the difficulty of the child's family and neighbourhood in coping with the handicap, (*iii*) the prevailing attitudes of the society towards mental retardation and (*iv*) the efficacy of health care and educational systems to deal with mental retardation, as a general issue.

Socio-Economic Status and Family Environment

The family environments and socio-economic status have been studied by many researchers. Kuppuswamy (1968) made a survey of mental retardation among middle school children in Mysore. SES analysis showed that a large number of retardates came from lower middle class or the upper-lower group. This may be due to the fact that the parents of the upper and upper-middle strata realise the futility of sending their retarded child to the normal school. Das and Ola (1972) examined the role of home environment in the child's intellectual growth in the results of a survey of normal and retarded children and their parents in Edmonton, Alberta. Some of the main results of the survey involed revelations of the positive relation between the child's IQ and parents' SES, education and the child's birth order.

Kishwar (1976) designed a study to assess the sociological factors associated with mental retardation. The findings suggest that broken homes, brutal discipline, low SES and faulty relationships with parents may contribute to mental retardation.

Nanda (1978) conducted an exploratory study on 250 children, aged between two and 18 years and diagnosed as mentally subnormal, at the child guidance clinic, R.A.K. College of Nursing, New Delhi. The variables studied were parental age, economic condition, sex, birth anoxia, convulsions, ordinal positions, family history of mental subnormality and modes of delivery. The investigator concluded that biological and external factors have equal effects on subnormality. They suggested that correction of adverse social, economic and cultural conditions could reduce or prevent much of retardation problem.

Chen (1981), after comparing the socio-eco nomic status of 956 mentally retarded children with an equal number of normal children, found that parents of mentally retarded children had lower educational levels and median incomes than parents of normal children. Retarded children lived in greater population density units and had poor travel experiences, few toys and reading materials and few opportunities to attend Kindergarten schools.

A review of the child protection and mental retardation literature highlighted a relationship between parents' intelligence and maltreatment by parents (Schilling, 1982). In a longitudinal study Yeates *et al.* (1983) assessed the intelligence of mothers before the children's birth, and children's IQ; and home environments were assessed at regular intervals during the first four years of life. The results indicated a monotonic increase in the predictability of child's IQ, maternal IQ and home environment as predictors.

Closely related to the home environment is child abuse. A negative home environment presupposes that the children do not get proper attention and care by the parents. An extremely negative environment could be one where there is incidence of child abuse and which could either lead to or contribute in mental retardation. Rose and Hardman (1981) reviewed the literature on the relationship of child abuse to mental retardation. They suggested a higher incidence of mental retardation for abused children than might be expected in general population. Velilla *et al.* (1976) made a study on 28 children and found that atleast in 19 cases, the mother was overprotective and the father was rigid and severe.

The socio-economic status and home environment, thus, are significant aspects in the context of the problem of mental retardation. Weiss (1985) remarked that a critical review of studies investigating the occurrence of learning disabilities, mental retardation and other handicap as a function of social background, suggest that there is ample evidence of a general over-representation of lower socio-economic status children among the handicapped.

Stimulus Deprivation

The most crucial impact of stimulus deprivation is perhaps experienced in the field of language development. The role of a stimulating environment on verbal development has been well documented in the 'Brookland Study' of Tizard (1960). Kagan's (1973) extensive work on the role of environmental factors pointed to the need of stimulating environment for proper growth of intellectual competence and language development.

The role of a stimulating environment on the development of intellectual and social competence has been the object of research since the day of Itard (1801). The need for enriching the environment of poor children has been highlighted by many researchers. There is ample evidence from cross-cultural research all over the world that learning is enhanced by stimulation which is, however, continues to be rather low or restricted for those who are living below poverty line. Cognitive development is facilitated by effective stimulation; and greater the range of stimuli, the greater is the effective stimulation (Asubel, 1965).

Stimulus deprivation has been considered as a part of cultural deprivation. Stimulus deprivation, though not a synonym of cultural deprivation, is no doubt an integral part of the concept of cultural deprivation. The children belonging to backward or impoverished culture, often face the situation devoid of stimulating environment. This is particularly true for rural areas where cultural deprivation owes its existence mostly to poverty and overcrowding. As about 80 per cent of Indian population belong to villages, lack of facilities and amenities in education, employment among many other areas, manifest themselves in limited awareness of the people; these in turn expresses themselves in unhygienic conditions and absence of any opportunity of some recreational activities.

Stimulus deprivation leads to a relatively slow cognitive development. The studies on stimulus deprivation have mainly taken into account the cognitive variables including language development. According to Bernstein (1961), the social structure gives rise to the style of speech; and the speech style of the lower class is often described as restricted, in contrast to that of the middle class. Thus, the social structure determines the language of a subculture which interacts with the mode of cognitive, as well as affective and evaluative expressions.

Mein and O'Connor (1960) compared oral vocabulary of severely subnormal patients with that of normal children. They found that long term institutionalisation resulted in the limitation of the vocabulary of the subnormal patients. In one study Lyle (1960) found lower verbal ability among institutionalised imbecile children as compared to those living at home. Later he tested the effect of a stimulating environment on the verbal ability and found that the experimental group developed in this area at a significantly greater rate than their controls, who remained in the institution.

Tizard's (1960) 'Brookland Study' showed gains in verbal development and development in some behavioural characteristics for a small group of imbecile children by placing them in a specially staffed unit.

Clarke and Clarke (1970) suggested that 'the deprivation effect' on speech might be the cause of the differences between the home-based and the institutionalised imbeciles. The deprived child is living under circumstances which are lacking in adequate stimulation. A child is animated by curiosity, by the desire to explore and by a tendency to interact with things and people around. Sometimes the school climate also does not make learning an exciting process.

The work of Clarke *et al.* (1958) is an illustration which demonstrates how children whose backwardness may be considered as partly due to deprivation, may make notable advances in performance at an early adult life, in a stimulating surrounding.

Bevli (1978) reported a study comparing the urban advantaged group, the urban disadvantaged group and a rural disadvantaged group in terms of cognitive development. Children of the urban advantaged group were found to have more material benefits in the form of books, toys, magazines and excursions. They had a variety of experiences; their parents were less restrictive and more democratic and their level of interaction with the children and the language used were of better quality. In contrast to this the urban disadvantaged group (sample drawn from Corporation schools) had parents of educational standard of not more than 10th class. Their children were not allowed such initiative; they were encouraged to show obedience to authority which leads to lessening of curiosity and independence. There was acute shortage of living and play space and lack of toys and books (because of limited resources), thus depriving the children from such manipulative activities and experiences. In the culturally deprived environment, there is a restricted range, less adequate and less ordering of stimulus sequences. During formative years, if the persistingly deprived environment continues, the intellectual endowment cannot be actualised. The impact of lack of environmental stimulation is even much more pronounced in cases of those unfortunate children who are already handicapped with their limited intellectual capacities, since stimulus deprivation leads to a relatively slow development.

Deprivation of stimulating environment manifests itself in a diversified form. It is liable to affect building of self-confidence, self-image, level of aspiration, perceptual and conceptual development, linguistic development, and also affective development. The low cognitive profile of these children particularly demands special handling of their learning situations with an optimisation of environmental stimulation. Organized recreational activities, like taking the children to the zoo, or to an excursion have significant implication for the retarded children; and such need is also well recognised. There are, however, some instances of parental rejection of retarded children and withdrawal of parental affection and care. Instances are also available, where the retarded children are deprived of the family entertainment and recreation usually available for the other members of the family. These less fortunate individuals need more love, affection and care and also the opportunity to experience a variety of situations, so that the already limited potentiality does not show a diminishing trend, for want of its exercise, due to a lack of genuine concern for them.

The culturally deprived home lacks in a variety of objects that act as constraints for language development. The adults do not read or speak to the child and this leads to poor reading and listening skill. Development of new concepts suffers because of the paucity of abstraction in every day life in the vocabulary of elders at home. The limitations that a child experiences in linguistic and cognitive spheres are reflected later on in his social and other psychological development as well. The child's first social group is his family where he participates in simple every day situations and becomes initiated and integrated gradually into the environment. Spurned on by a growing feeling of belongingness to the family, he learns to orient himself to its routine and play activities. Socialization of an individual and integrating him into the community would involve the process of preparing him to live in the society.

The role of a gamut of deprivations resulting from biological, social and psychological conditions has been identified in different aspects of cognitive development. Similarly the role of sensory deprivation (Zubek, 1969), malnutrition (Kaplan, 1972), cultural background (Triandis, 1964), and social deprivation (Davis, 1968) on cognitive processes, has also been the object of research from time to time. Deprivation of normal intellectual stimulation is liable to lead to mental retardation along with deficiency in language development. In addition, the role of certain environmental deprivation created by man-made disorders, such as social and cultutal deprivation, stimulus deprivation and malnutrition has come into prominence in the present decades in the context of the problem of mental retardation (see Sen, 1976, Sen and Sen, 1984).

Malnutrition

The term malnutrition literally means 'bad nutrition' which is not necessarily confined only to under-nutrition, it may also include over-nutrition. Nutrition is the process by which a living organism acquires the substance required for growth, maintenance, repair and function. Nutrients could be divided into five major groups: water, proteins, carbohydrates, fats, minerals and vitamins, each having its own importance and functions. Protein is most essential for human growth, and carbohydrates and fats are responsible for generating energy. These are measured in terms of calorie, and therefore, the deficits of these two nutrients is known as Protein-Calorie-Malnutrition (PCM).

Inadequate nutrition can affect both physiological and psychological development in humans. Clarke (1976) remarked that malnutrition, being part of a generally adverse situation, seldom exists in isolation. Therefore, it is difficult to exactly pinpoint the effect of malnutrition on intellectual development. In fact, malnutrition may be taken as an integral part of a total negative environment and socio-economic status of the families of retarded children.

In spite of complex interactions, the relationship between malnutrition and subsequent mental development has received much attention. Kaplan (1972) reviewed some of the major studies which indicated that malnutrition is associated with mental deficiency. He commented that although a causal connection has not been directly demonstrated, the researches reviewed by him contain compelling evidence that early malnutrition is a contributing factor in the incidence of mental retardation.

Pasricha *et al.* (1972) studied 33 children with various degrees of malnutrition. Parental IQ of these children was measured; their level of education was also recorded. The study indicated nature-nurture relationship in the field of intelligence; malnutrition was a factor which could accompany parental low IQ or low socio-economic status. Das and Pivato (1976) attempted to study various aspects of malnourishment as also its relationship with mental deficiency. They too considered the instances where malnutrition might occur in addition to the factor of poverty or low socio-economic condition. The cultural peculiarities of a community might encourage directly or indirectly incidence of malnutrition. The traditional food habits of the family or of a community, mother's intellectual level or educational background are also some of the important factors in this respect. According to Riccuiti (1973), major influence of malnutrition may be displayed in attention, motivations or arousal deficits rather than in basic intelligence and learning competence in children.

Malnutrition undermines the growth and quality of brain which cannot be fully repaired in later years. Malnutrition during the critical periods of brain development may produce permanent impairment of brain structure and affect learning capacities of children. Malnutrition which is due to nutritional deprivation, interferes with the child's motivation, power of concentration and capacity to learn (Berg, 1973). Children who survived a severe episode of malnutrition for sufficient duration in early life, are handicapped in learning some of the fundamental academic skills, and are therefore, less able to profit from the cumulative knowledge available. Birch (1972) pointed out that by inhibiting the development of a primary process essential for cognitive growth, malnutrition interferes with orderly development of experience and contributes to a sub-optimal level of intellectual functioning.

Severe malnutrition during the foetal and infancy period in animals and human beings, decreases brain size, reduces the number of brain cells and results in behaviour abnormalities (Read, 1982). The relationship between lesser degrees of malnutrition and intellectual development is more complex. Social, genetic and other factors assume greater roles under latter conditions. According to Read (1982), malnutrition is to be studied in relation to parental interaction with the malnourished child and other social-environmental factors that accompany malnutrition. Similarly, Wilton and Irvine (1983) studied the adequacy of dietary intakes of ten socio-culturally mentally retarded children, ten non-retarded children of low socio-economic status and ten non-retarded children of average socio-economic status. The socio-culturally retarded subjects showed significantly lower daily intakes of almost all basic nutritional substances than did the non-retarded subjects in either the low or average socio-economic status groups. It was also found that the socio-culturally retarded groups' intake of iron, calcium, thiamine was below National Academy of Sciences, National Research Council recommended daily allowance levels, a finding that did not occur for either of the other groups. The results, therefore, suggest that it seems necessary to focus on dietary provisions as well as on other home conditions in future intervention programmes for children at high risk, for arresting socio-cultural mental retardation.

Researches are available showing that children with malnutrition had not only had retardation in physical growth, but also similar effects on learning abilities. It seems that it is not only general environmental deprivation, but also factors that are closely related to the event of early malnutrition that might have contributed to a further depression of academic performances.

Rossetti and Maria (1978) proposed an explanation for the link between environment, malnutrition and role of mental development. The basic assumption is that malnutrition and socio-economic conditions interact leading to slow mental development by undermining the establishment and maintenance of "Syntonic", "Synchronic" and "reciprocal" relationship between the child and the mother. In a deprived social environment the child will rarely find a person prepared to "syntonize" (*i.e.* to tune in) and be stimulating and responsive to his or her behaviour. Because of malnutrition and other ailments, these children are often biologically less able to be stimulated and responsive to their care-giver; they show apathy, irritability and a loss of interest in the social environment. The combination of these conditions creates a cycle of interactional deprivation which inhibits intellectual development.

Barnes (1976) observed that apathy and reduced curiosity associated with early malnutrition are due to functional deprivation of experiences and a functional avoidance of new experiences and novel stimuli. Dasen *et al.* (1977) reported that poor nutritional status of the child in early years adversely affects his exploration of the environment and active experimentation. Patel *et al.* (1974) studied the impact of total milieu surrounding malnutrition, reporting that there were deficiencies in inter-sensory integration.

Bailur (1972) made a review of work highlighting the nutrition and dietary survey of pre-school children conducted under the auspices of the Indian Council of Medical Research at six different research centres, *viz.*, Bombay, Calcutta, Delhi, Hyderabad, Poona and Vellore. It was found that 90 per cent of the children are assumed to have various degrees of protein calorie malnutrition (PCM). PCM has become a world-wide problem, especially in underprivileged communities in the developing countries.

From a number of studies on the relationship between mental retardation and malnutrition, Cruz (1976) concluded that poor rural children with an inadequate diet show a marked inferiority in mental and physical development compared to urban children. Some of the studies show that a change to better nutrition and environment can do much to remedy the effects of malnutrition in the early years of life. In one study Brown *et al.* (1979) carried out a nutritional assessment involving 64 non-institutionalised children in the age range of 2-19 years with various types of handicapping conditions (*e.g.* cerebral palsy, Down's syndrome, hyperactivity). In general, subjects were smaller in weight and height than average, and frequently consumed imbalanced diet. It was also suggested that most children who have minimal brain dysfunction, attention deficit disorders, learning and language disorders and hyperactivity, have metabolic disturbances.

Kishwar (1981) reported that broken homes, neglect on the part of parents, and malnutrition may affect the mental, emotional and physical growth of the children. Sen, A.K. (1981) reviewed the status of mental retardation care and treatment in India. Along with physical care, education regarding small families and other factors, the need to maintain a well balanced diet is also emphasised. Nutrition, thus appears to be a significant contributing factor in mental retardation. Sen (1987b) also discussed elsewhere the role of nutrition in human development.

Food intake though representing in principle, the most fundamental information in nutrition studies, is not satisfactory because of the difficulties in obtaining dependable and representative values. Specially the lower socio-economic group in India hardly takes any nutrient that could be measured, in their daily diet. Therefore, many researchers chose head circumference, arm girth, weight to height (wapting) and height to age (stunting) as four indices of malnutrition on the basis of anthropometric measurements. However, head circumfernce could not be a valid measure, since brain growth follows its own rules independent of bodily growth. Similarly arm girth was also rejected because the investigators believed that it might be applicable to the younger infants only. With age, the bone size increases, and it could not reflect the acutal size of the arm. Weight also cannot reflect the actual weight of the body, because the weight that is measured, includes both body weight and water content of the body. Sometimes the patients of edema though have normal weight, can never be taken as well-nourished. It has also been observed that even malnourished children possess normal weight to height. Therefore, stunting has been accepted as the best measure of malnutrition. Height is considered as a sensitive indicator of disturbed growth and it exhibits substantially smaller intra-individual variation over a short period of time than body weight.

It is interesting to note that most of the ecological factors *viz.*, conditioning influences, cultural influences, socio-economic factors, health and educational services etc., are customarily discussed in the context of cultural deprivation. It is necessary, therefore, to make an 'ecological diagnosis' of the variosu causative and existing factors responsible for malnutrition in a community before it is possible to put into effective measures for the prevention and control of malnutrition. The position of the poor in relation to the population distribution, resource depletion, environmental pollution, under-development and social disruption all may account for cognitive and other behavioural inadequacies.

MANAGEMENT OF THE PROBLEM OF MENTAL RETARDATION

Two major perspectives for tackling the problem of mental retardation are prevention and amelioration. The task of prevention would imply adopting primary preventive measures against those conditions which are conducive to the development of mental retardation. Since many factors are involved in the aetiology of mental deficiency, preventive measures would also be diverse in nature. Amelioration would involve seeking of welfare measures—educational, social and rehabilitational for some kind of intervention aimed at modifying an existing or developing condition.

So far as mild retardation is concerned, social-cultural deprivation seems to be one of the major causes, though the mechanism of the relationship between the two is, by no means clear. It is worthwhile to note that in the developed countries in spite of continued diminishing inequality in economic and housing and other facilities, occupational class over the past decades could not wipe out the stigma of backwardness being associated with mental deficiency.

So far as the prevention, care and amelioration of mental retardation, caused either by genetic, organic, or environmental factors, are concerned, the report of the President's Committee on Mental Retardation in 1972 appeared to be highly optimistic, which stated "Using present knowledge and techniques from the biomedical and behavioural sciences it is possible to reduce the occurrence of mental retardation by 50 per cent before the end of the century". Clarke made a critical analysis of this prospect in his presidential address delivered on 23rd April, 1976, at the Fourth Congress of the International Association for the Scientific Study of Mental Deficiency held in Washington D.C. He commented on the prospects of halving the incidence of mental retardation within the next twenty-five years. "These are potentially good in developed countries so far as the severe grades are concerned, both for reasons of secular social trends in the age at which children are born, hopefully a reduction in family size, and improvements in public health and medical care. These changes are not specifically aimed at mental retardation, but add those which are, including genetic counselling, pre-natal diagnosis, the correction of rare metabolic defects, then the prospects look encouraging. Though the prospects of prevention seemed good for this group, the prognosis for them did not appear so bright, as most of them are pathological in origin. However, the scope of amelioration still exists to some extent, even in these groups, of severe degree of retardation."

Clarke's assessment of England's position in the context of the possibility of halving the incidence of severe mental retardation shows that this optimistic outlook has atleast been partially realised when he mentioned the results of comparative surveys between 1920's and 1960's. The results of this survey indicated that incidence of below 50 IQ conditions decreased by about one-third. This relatively significant achievement in the more severe grade of retardation had been ascribed to general better social and health services which included better immunisation facilities against common diseases during infancy, early detection of rare cases resulting to some extent, in correction of inborn error in metabolism, family planning, better antenatal and post-natal care, genetic counselling and others.

Clarke's analysis and comments, as he himself admitted, are mainly for the developed countries. In any case, Indian situation is not directly comparable to that of the western countries. The concept of genetic counselling is still not so popular in India. However, there has been an increasing awareness of the problem of mentaliy handicapped over the years. Some other positive indications are that the theme of family planning which has been accepted at a national level, has overcome some of the major hurdles and it has come a long way in the process of becoming a popular concept. Again some of the most dreadful diseases like smallpox have been completely eradicated. Nutrition programme for school-going children has also started, though in a small scale as yet. With similar achievements in future it would not perhaps be impossible to reduce to some extent the prevalence rate of severe degree of mental retardation in the Indian context as well.

The scope for implementation of the preventive measures in India is not as yet bright, because of paucity of resources like technical personnel, material and finances. However, as prevention is always better than cure, any kind of investment would be well repaid in the long run.

Clarke furthermore argued that there must always exist, by definition, in any population a bottom two per cent arising from a range of pathologies including biological, social and genetic factors. The main emphasis would be then on amelioration of the conditions by helping them in developing limited assets so that the individual can function usefully. Some strategies called "normalisation" to this effect had been suggested by Grunewald (1976) who stated that "the term implies . . . a striving in various ways towards what is normal; normalisation does not imply any denial of the retardate's handicap. It involves rather exploiting his other mental and physical capacities so that his handicap becomes less pronounced. . . ."

Among the mildly retarded, comprising more than 75 per cent of the population of the retarded, the organic factors are implicated only in the minority of the cases, another proportion of these groups of retardate justifies their existence as being the normal genetic variation and majority of them are subcultural in origin. Genetic and environmental factors, however, themselves are not always uncorrelated. Thus, only about five per cent of the retarded population would be comprised of more severe grade of retardation; and the major responsibility seems to be vested in an attempt to ameliorate the adverse conditions for the rest.

Since holding of the incidence of mild retardation, does not seem to be very promising, amelioration programme involving welfare measures—educational, social, environmental , and rehabilitational, would be the correct perspective following the principle of normalization.

The United Nations already made a Special Declaration on the Rights of the Mentally retarded persons in 1971 (see Appendix-III). This has been adopted by the International League of Societies for the Mentally Handicapped, and it has been emphasised in the legislation that the mentally retarded person has the right to be respected. The President's Committee on the Mental Retardation also incorporated certain points regarding the Rights of the Retarded, in its report to the President of America (See Appendix-III).

EDUCATION, TRAINING AND SOCIAL REHABILITATION OF THE MENTALLY HANDICAPPED

The types of education, care and training required for different categories of the retarded are not the same. Early identification and intervention are some of the prerequisites.

Education of the mentally handicapped was not a matter of much interest anywhere in the world until the early 19th century. Education of the retarded must be understood in its broadest possible context. Education does not limit itself to only academic achievement or mere textbook learning; rather it is more concerned with the all-round development of an individual. The problems of the retarded are varied. Not only they have limited intellectual and learning capacity, which makes it difficult for them to handle the symbols in relation to reading, writing and arithmetic, but they are also incapable of having mature social and emotional relationships with peer group or others. The retarded has poor self-concept and lacks self-confidence in solving problems or getting along with others.

An optimistic developmental model of mental retardation holds that the retarded is capable of growth, development and learning. The aim of giving education to him would be to help him to develop as a person, so that he can manage his daily personal affairs and regular work and can get a job according to his potentialities, though his psychological abilities dealing with analysis, synthesis, reasoning, recognition, language communication or numerical treatment may never reach the desired level. The aim of education should be considered in relation to the characteristics of the individual concerned. Even the most severely or profoundly retarded is assumed to have some capacity for developing relatively higher levels of skill progressively. The optimistic view suggests that education and training must be provided to the retarded to promote his overall development, keeping in view his limitations and potentialities.

Integrated Education: Till recently, education for retarded children in most countries did not form a recognised component of the national or any State plan. However, situation is changing fast and more and more countries are favouring an educational scheme which recognises that exceptional children's need to be integrated with the so-called normal children in schools in such activities as games, physical education, school assembly, recreation and hobby activities. They, however, need to be taken out of the regular class for remedial treatment where there is less class pressure and where their individual needs can be catered better. In Indonesia, for example, in some rural areas the education of the handicapped children including the blind, the deaf and the retarded has been integrated with regular schools. Here the special need of the handicapped children is met in part by visiting (specially trained) teachers who at regular intervals do the supervisory work to be followed by the regular teacher. The regular teacher thus needs to follow the progress of the child jointly with the special education teacher by reinforcing the remedial treatment in the class. Adequate use of programmed instructions and instructional games and co-operation, competition game like Prisoner's dilemma would be quite useful in this respect (Ghai and Sen, under publication).

Nature of Education and Training: The usual curriculum provided for the mildly and moderately retarded would not suit those youngsters with profound or severe retardation who most often need assistance in such basic skills as sitting up, chewing, swallowing, or going to the toilet. These developmental areas are the concern of the special educators who are to decide on the type of the curriculum needed, how such a curriculum could best be delivered, and what would be the facilitating environment most congenial to the development of the training programme for the teachers entrusted with the care of the children.

The moderately retarded need special educational programmes which should aim at development in major learning areas. In addition to basic education in three R's, training in self-care skill needs to be given. This should include major developing areas like motor integration, perceptual and motor skills, language and communication, and conceptual skills. Special curricula may be developed and standardised for this purpose, benefiting from the research findings of psychologists and educationists. Creation of more service centres and day care centres leading to development and training of the moderately and some severely retarded is also needed.

The mentally handicapped may be given special training leading to practical help in their day to day life, such as dressing, independent movement, handling of money matters, maintaining personal hygiene, learning to communicate about their needs, self-help, etc. Special curricula need to be developed to include self-care training and emotional development.

Creation of more service centres and day care centres leading to development and training of moderately and severely retarded is needed. Day care centre has been looked upon as a model form of care in most of the countries, as has been noted in the WHO workshop of the South-East Asian Region held in New Delhi, on September 12-16, 1978, for the 'development and strengthening of mental retardation programme.' It is less complicated to implement and less costly to maintain the desired level of care, and at the same time it preserves family ties. The consensus of workshop was to emphasis day care as the more generally applicable setting for retarded children of school-going age. Grunewald (1980) also commented that "an influence for favourable development is to be found partly in the small number of inter-personal relations forced upon the retardates thus making them potentially stimulating rather than frustrating, and partly in the homelike atmosphere and equipment of the room and of the unit to which the room is connected." (Grunewald, 1980, p. 66).

Creation of small, parent-initiated facility in diversified forms for the retarded children, outside mainstreams of professional educators and administrators, has received impetus in recent years. The advantage of adopting the principle of 'small environment' for the severely retarded where the number of persons for interaction is limited to a group of 5 to 8, or even less, has been outlined by Grunewald (1980). He has emphasised a caring atmosphere and day facilities that preserve the ties with families.

The significance of an early education programme and the nature of pre-schooling programming has been detailed by Neisworth and Smith (1978). In the Indian context Malhotra (1980) has also suggested development of some educational programmes including home-stimulation programme for the mentally, handicapped.

The profoundly retarded who need custodial care constitute only a small proportion of the retarded. More institutions are needed in all taStes to look after such cases. Adequate trained personnel may be employed in such institutions. Early identification and intervention followed by special education and training would maximally benefit the mildly retarded.

Vocational Training of the Mentally Handicapped

Academic achievements are relatively unimportant in comparison to social adaptation and vocational training for the mentally handicapped.

Vocational training is the only mean of making the mentally retarded economically and socially self-dependent, at least partially. Vocational schools for the mentally retarded adults are not too many in India; as a result, many of the retarded do not find suitable jobs even after education and training in special schools. For the mentally handicapped adults, sheltered workshops, farms and creation of employments in industries are needed. For the severely retarded and many moderately retarded, who are not capable of receiving open employment, sheltered workshop is the only answer for employing them permanently. After receiving training they work on various subcontract works received from various agencies. Sheltered workshop may be started in numbers in different parts of the country to absorb the mildly retarded and even some moderately retarded who can prove their worth under proper training and care. The paucity of employment opportunities for the adult retarded in India has been discussed elsewhere by Sen (1980c, 1981c).

Residential Facilities

The retarded adults should be absorbed into the community as far as possible. They may live satisfactory functional lives with their families; though they may also live in small residential groups. Vocational training and education of the retarded should enable them for an independent living as far as possible. Work may be given to them with financial recompense. The retarded adults should have a chance, if they so desire and capable of independent living and working, away from their own family. However, the issue of their residential facilities needs to be worked out individually for each society and culture. In the Indian context, it seems that whenever possible, the family may be encouraged to look after their own retarded offspring (irrespective of degree of retardation) for which the family may be provided financial assistance, particularly when the retarded is not gainfully employed in a sheltered workshop or in an open industry.

Training of the Personnel

Any programme in the service of the retarded calls for a coordinated effort by all agencies in an attempt to ameliorate the conditions of the handicapped and to rehabilitate him into the community. Needless to mention, the Government both at Centre and State levels, local authorities, voluntary agencies and public at large should work in this direction.

The very nature of the problem of retardation involves persons of different professions with diversified background training and education. Adequate training and education of all personnel involved, is of primary importance. Medical practitioners and various other specialists, psychologists, teachers, social workers, technicians, all should receive a good background knowledge in the subject of retardation.

The task of training the personnel is not so simple. Special emphasis should be laid on the training of teachers of the handicapped to acquaint them with modern techniques of education, training and management. Training programme would also involve training of personnel for residential institutions and day care centres. Similarly trained personnel are also needed for imparting pre-vocational and vocational training to the retarded.

Training of the parents is another important area for consideration. They also need counselling for their own psychological adjustment in accepting the fact that their child is handicapped. Guiding and involving the parents, particularly in the pre-school training of the child is of most significance. As also justified by Mittler (1980), the concept of "mother-teacher" needs to be given due consideration; in fact, the whole family of the retarded might need help, both economical and psychological. Parental counselling would be necessary to facilitate the acceptance of the retarded child by the family.

Public awareness of the problem of retardation is necessary. Coordination of professionals concerned with the problem of the retarded may be effected in the form of periodic organised meetings at different locations.

MENTAL HANDICAP AND LAW RELATED PROBLEMS

The mentally retarded is more frequently confronted by the complexity of law; and he is always disadvantaged because of limited mental capabilities. Goddard (1914) observed that if mentally retarded individuals are not propery supervised they would inevitably tend toward criminality. This conclusion was based upon their studies on delinquency showing that 25 per cent of all delinquents are mentally defective. Marsh *et al*. (1975) reported that there were more 2,30,000 adult males and females incarcerated in State prison throughout U.S.A. at that time. Sen, A. (1978) critically examined the theory that mental retardation itself predisposes a person to the Commission of Criminal Acts. She observed that the retarded may be unable to respond intelligently to police procedures and other encounters with the law. Retardates have more confrontations with the police than non-retarded persons (Allen, 1970; Marsh *et. al*., 1975). They have more problems with legal implication as members of the public (Weingold, 1975), and yet have an inadequate knowledge and skill in dealing with resulting legal problems (Krause, see Riekes *et al*., 1977). Riekes *et al*. (1977) have thus suggested for special law-related education for the mentally retarded. Bartlett (1977) has, however, discussed the problems associated with this, as faced by the special educators. The way in which the statutes are written, influences the handling of the mentally retarded offender. Marsh *et al*. (1975) reported that over 90 per cent adult mental retardates are increasingly being processed through the criminal justice system. They pointed out that the Anglo-American concept of mental incompetence provides little protection to ensure the special handling and treatment required for the retarded. They further suggested for improvement in detection of mentally retarded followed by appropriate handling of them. The implication of the laws governing mentally ill and mentally defective as existing in England and Wales was discussed by Tizard (1965).

The necessity for improvement in the protection of retarded's rights was lately recognised in different parts of the world. The retarded may lack an awareness of their legal rights or even fail to recognize the importance of these rights (Menolascino, 1974). The Swedish Parliament adopted in December 1974, improved legislation on guardianship and other related matters which was implemented in 1976. Sterner (1976) pointed out that in Sweden, like other countries, based on conditions in earlier times when there was no special insurance and special welfare provisions, the acquisition and maintenance of property was the only means to obtain economic security. With the revised legislation, Sterner proudly stated that perhaps "Sweden is the first country where these principles have been more or less completely adopted in legislation."

In India there is no comprehensive law to provide for the care, training, education and rehabilitation of the retarded. At present the Lunacy Act of 1912 is the only piece of legislation covering the mentally retarded. This law confuses the mentally ill (insane) with the mentally retarded. The law was modified somewhat in 1969, but still being inadequate as it keeps on describing a retarded person as of "unsound mind" resulting in the landing of many retarded persons in mental hospitals. There are some provision for the care of mentally retarded children in Children Act. However, the Children's Act covers only partially in the Union Territories and the States, with the exception of Assam, Bihar and Orissa. Children under 16 years and in some States under 18 years of age. A neglected child is produced before the Child Welfare Board/Juvenile Court by the police as a case, in need of care and protection. The purview of a neglected child is very wide covering even the retarded child, since they are in imminent danger of becoming involved in many untoward situations. Under this Act, thus the term "neglected child" is very wide; it is, therefore, necessary that adequate provision should be made in all juvenile courts, so that courts after making necessary enquiries, can send such children to special schools or institutions.

In India a seminar was held on "Legislation for the Mentally Retarded" on March 27, 1977 pointing to the need of a comprehensive law, "what will help the retarded at every stage of his life, probably even prevent mental retardation in some cases, but certainly minimise risk of deteriorating conditions. A law which will cover every degree of retardation and ensure the social security of retarded persons is an absolute necessity, and the earlier it is enacted, the better for not merely the retarded, but for society as a whole".

Gupta (1977) after making an analysis of the adequate legislative provisions for the care, education and rehabilitation for the mentally retarded in other countries like England and U.S., observed that India was far behind in this respect. Pai (1977) also pointed out that before any legislation could be introduced, a comprehensive study needed to be made about the condition of the retarded class of citizens as a whole. He also suggested a comprehensive legislation covering all aspects of mental retardation.

Appropriate piece of legislation needs to be enacted to protect the retarded from any kind of exploitation. Some effort in this direction is being exerted by the *FWMR-I* (see FWMR News letter, 1987).

MENTAL RETARDATION : THE CHANGING INDIAN PERSPECTIVE

Mental retardation is not just a medical problem, it is basically a social problem. It is a challenge for any of the interdisciplinary sciences, having direct or indirect concern for the mentally handicapped. The most logical way of considering prevention and amelioration would be by means of cumulative programme both biomedical and social, for individual development from conception onwards, in conjunction with the parental education and mobilisation of environmental facilities.

A gradual growth of facilities for the retarded in India demonstrates the awareness of the problem as well as its consequent solution at individual, organisational and Governmental level—including at States and National level.

Types of facilities in India include residential institutions, day care centres, sheltered workshops, special sections in normal schools, institutes for handicapped persons, and special clinics or wards in hospitals.

The oldest existing school using "psycho-medical rehabilitation" was established at Ranchi in 1934. It was followed by a "Home for the Mentally Deficient Children" in Bombay in 1944, which is now the largest one in India. The school requires prospective teachers of the mentally retarded to take a one-year course in mental retardation recognised by the Government of Maharashtra. Recognising the need for trained teachers for the handicapped, the first training programme for teachers was started in 1955 in Bombay at the 'School for Children in Need of Special Care'. Since then three more institutions have started such teacher-training programmes. Another special school was started in Calcutta in 1951; named "Bodhi-Peet" which offers both residential and out-patient facilities. In 1953, one non-residential institution was established—a "child guidance school" in New Delhi, which is the first known school of this kind in India.

The next decade saw the birth of eleven more schools in different parts of the country. The following decades took the momentum in developing service programmes for the retarded. Total number of institutions in 1966 was 51 which became 91 in 1973 and now there are over 150 institutions all over the country catering to the need of the retarded either exclusively or in conjunction with other handicapping conditions. Of these institutions some are run by States or by Central Government. Voluntary agencies run about 40 institutions. Some institutions are also run by private organisations. Also some social groups like the Rotary, Lions Innerwheel etc. have shown much of their concern for the welfare of the retarded.

The Fifth Five Year Plan of the Government of India made a substantial provision for the welfare of the handicapped. A portion of this amount was exclusively allocated for developing services for the retarded, with particular reference to their rehabilitation programmes. Grant-in-aid are also extended to registered voluntary institutions and also to research projects proposed by individuals or organisations, and universities. The Sixth and Seventh Five Year Plans also have a conspicuous quota for the welfare of the handicapped.

However, all these facilities existing at the present time, can cater to the needs of only about one per cent of the retarded population in India; furthermore, most of the service programmes are situated in urban areas only.

The Federation for the Welfare of the Mentally Retarded in India (FWMR-I) was formed in 1966. Most of the members of the Federation were persons from the All-India Association on Mental Retardation which was formed a year earlier, in 1965 at Chandigarh, at a seminar organized by the Punjab Parent-Teacher Association for Mentally Handicapped Children. Since the inception of the Federation, the scope of coordination and communication between various training establishments was recognized. Thus, the Federation for the Welfare of the Mentally Retarded was entrusted with the responsibility of serving as the platform for co-ordinating activities of all Voluntary Organizations working for the mentally retarded. Subsequently, several All-India Conferences on mental retardation were held almost every year, which were attended by psychologists, teachers, physicians, social workers, political leaders, and parents. In all the conferences there was a move for better residential and day care facilities, provisions for special schools for the mentally retarded and special classes in regular school systems. The country is now endeavouring to achieve these goals. India hosted the Seventh World Congress of the International Association for the Scientific Study of Mental Deficiency in Vigyan Bhawan, New Delhi in March, 1985.

Today in India the formulation and implementation of appropriate policies for an all-round welfare of the mentally handicapped is very much in view. A National Institute for the Mentally Handicapped (NIMH) was started in 1984 at Secundrabad near Hyderabad to provide training for an all round development of the mentally handicapped. The regional centre of the NIMH has also recently started in New Delhi which started organising refreshers' courses and special training for the teachers of the handicapped. The total number of

Institutes for the mentally handicapped has been reported (Chattopadhaya, 1986) to be 76 at present in India. Very recently, however, the journal of 'Disabilities and Impeirments' which is being published in India from December, 1987, has provided a list which includes names of 146 Institutions for the mental retardates situated in different parts of the country (Vohra, 1987). The 'International Year for the Disabled Persons' (IYDP) observed in 1981 brought a new impetus and fresh outlook to revitalize different welfare programmes for different categories of the handicapped, including the mentally handicapped.

PART IV

This section deals with various issues pertaining to the scope of integration of the Handicapped into the society.

CHAPTER 8: *THE HANDICAPPED IN THE INDIAN CONTEXT: PROSPECTS AND RETROSPECT*

CHAPTER 8

The Handicapped in the Indian Context : Prospects and Retrospect

The organisation, Rehabilitation International was first initiated in 1922 at Blyria, Ohio (USA) under sponsorship of the Rotarly International, as International Society for crippled children. This was reorganised in 1939 under the name of Internationa Society for Welfare of Cripples. The objectives of this organisation are to serve as international bureau for collection, compilation, and dissemination of information about the disabled. It also makes investigation about the causes of disablement and promote their elimination. It co-operates with all agencies including Government and private, both at national and international levels in its process for services for the welfare of the disabled. This organisation, Rehabilitation International prepared a report in the Year of the Handicapped, in 1981, for presentation to the UNICEF Board. This report brought out a grim picture of human suffering which is being experienced in different parts of the world, particularly in the developing countries.

The disability issue cannot be handled as an isolated phenomenon, as it is intricately associated with innumerable factors such as the socio-economic condition of the family, the attitude of the family and neighbourhood, the resources available in the community and the political philosophy of the society.

There has been a phenomenal development in the national concern for the handicapped both in the developing and the technologically advanced countries in recent times. Many nations are still engaged in the continuous process of strengthening of health care services and research programmes oriented towards prevention, early detection and care. Educational and rehabilitational planning and integration of the handicapped in the society have emerged as some of the major areas of interests in all civilised nations over the last few decades.

The International Year of Disabled Persons (IYDP) celebrated in 1981, provided an unprecedented impetus on the wide spread concern for the disabled evincing the scope for social development of the handicapped all over the world.

It is a fact that organised social security system was not very prevalent in India for the welfare of the handicapped in the pre-Independence era. Though there has been a tremendous increase in the educational facilities for children more than ever before, education of the handicapped was neglected for a long time. The Institutions for different categories of the handicapped, such as, the blind, and the deaf, were first started in the 19th century by the missionaries.

Educational and vocational training and counselling and guidance services for the disabled are needed as much as they are needed for the able-bodied persons. Only through proper education and training a disabled person would be able to overcome his handicap and to use his left-over potentialities. The need for the right type of education for the handicapped are imperative, as education and training are important instruments for bringing the disabled into the mainstream of the society.

MULTIFARIOUS PROVISIONS FOR THE DISABLED IN INDIA

In the post-Independence period the Government of India recognised the fact that the disabled have also equal right to participate in social and economic activities along with others in the society. This recognition of basic rights of the disabled

led to a guaranteed provision under Article 41 in t
Constitution adopted for the first time in 1950. The
ment of India has included the "Welfare of the Hanc
in the Nation's Five Year Plans by realising that the h
ed constitute a part of the weaker sections of the co
The Article 41 and 46 of the Indian Constitution thus
the welfare of the disabled persons. One of the direc
ciples of State policy under Article 41 of our Co
mentions that the State shall, within the limits of its
capacity and development, make effective provisions
ing the right to work, to education, and to public ass
cases of unemployment, old age, sickness and disable

Under the provisions for the last category, *viz.*, dis
the Government of India has undertaken after Ind
multiple programmes of education, training and reh
for both the physically and mentally handicapped. Va
grammes for the welfare of the disabled have been i
through the Department of Education and Social
The Department of Welfare, Government of India is
body to initiate and co-ordinate programmes for the
tion of the handicapped in the country either directl
the State Social Welfare Departments, Voluntary Org
and International Agencies, such as UNICEF, etc.

Towards the partial fulfilment of the directive
of State policy that the State shall, within the limits o
nomic capacity and development, make effective prov
securing the right to work, to education and to public
in cases of unemployment, old age, sickness and dis
the Government of India has started multiple prog
education, training and rehabilitation for the physica
capped. This newly awakening concern was exp
earmarking Rs. 24.40 crores in the Sixth Plan for th
of the handicapped. In the Seventh Plan (1985-90)
amount was increased by more than five times (Rs. 1
of the Sixth Plan outlay for an all-round welfare of
capped community. Both the Central and State Go
concentrated their attention on the prevention of
making provision for the training of the professional
ing research activities and development of service pro

Since 1955, the Government of India has provided opportunities for the rehabilitation of the different categories of the handicapped, through scholarship provisions from class IX onwards including vocational training for the handicapped students belonging to the non-tax paying families. In the year 1975-76 itself, the number of such scholarships awarded was 6,554 involving an expenditure of Rs. 2,937 lakhs (see Desai, *et al.* 1979). Different States also started adopting the scheme later on. Evaluation of such welfare programmes and projects was also initiated around mid-seventies by the Government of India.

It thus becomes evident that only after Independence the Government introduced various programmes for the welfare of the disabled through the Departments of Education and Social Security. The Department of Welfare under the Ministry of Human Resources Development is the apex body to initiate and coordinate programmes for the rehabilitation of the handicapped in India either directly or through the State Social Welfare Departments, Voluntary Organisations and International Agencies, including those of the United Nations.

The earliest rehabilitation efforts for the handicapped sponsored by the Government of India were restricted primarily to victims of war inflicted injuries, the ex-servicemen. Later on many of these services were gradually expanded to include civilian handicapped as well. Rehabilitation services and institutions were mainly started in India by the middle of the 20th century. International Organisations like WHO, UNO and UNICEF played an important role in boosting the rehabilitation programmes in India. For instance the WHO programme for the prevention of blindness aims at fostering national and international action with the objective that by 1989 programmes will exist in at least 60 developing countries for the prevention of blindness, the restoration of sight to the curable blind, and the provision of essential eye cure and access to referral services hitherto untouched for communities.

At the initiative of the Government of India, different States started compiling directories of welfare agencies working for the handicapped. A book has also recently been published (Chattopadhyay, 1986) giving an All-India picture providing a

Directory of Educational and Vocational Training Institutes for the Handicapped. According to this publication, there are around 458 Institutions and agencies, both Government and Voluntary Organisations are involved in the field of welfare and rehabilitation of the handicapped in India. Detailed information has been provided under the following categories:

Categories	*Number of Institutions/Agencies*
1. Institution for the Blind	142
2. Institutes for the Deaf and Dumb	114
3. Institutes for the Orthopaedically Handicapped	68
4. Institutes for the Mentally Retarded	76
5. Artificial Limb Manufacturing Organisations	7
6. Libraries for the Physically Handicapped	16
7. Teachers' Training Institute for the Handicapped	19
8. International Organisations supporting India in the field of education and rehabilitation of the Physically and Mentally Handicapped	16

The directory has provided names, addresses and detailed descriptions about functioning of these institutes and agencies for different categories of the handicapped for different States.

The proclamation of the year 1981 as the IYDP has generated an awareness among the disabled population throughout the world. India also could not remain unaffected by this movement. The action oriented programmes, both at the Central and State levels have initiated several welfare programmes to provide facilities to the handicapped through various Government Departments. The proposal for having State-wise directories of agencies serving the handicapped was drawn-up in the year 1981, the International Year of the Disabled Persons by the then Ministry of Social Welfare, Government of India. Such directories prepared by some of the States have also been submitted to the Ministry of Welfare. For example, a directory of the Institutes for the physically handicapped in Kerala has recently been prepared by the Research Institute, Rajagiri, P.O. Kalamassery, Kerala. This directory provides information on

Institutions engaged in social welfare services to all categories of the physically handicapped throughout the state. Similarly, a directory of all the Voluntary Organisations for the welfare of the physically handicapped has been prepared by the Jayaprakash Institute of Social Change in the Salt Lake city of Calcutta for West Bengal and Sikkim. This Institute has also made a survey of the schemes and concessions by the Relief and Social Welfare Department of the Government of West Bengal.

The Department of Social Work of Lucknow University also studied in 1982 the Welfare Programmes of the U.P. Government for the physically handicapped. The College of Social Work, Indian Council of Social Work in Andhra Pradesh also made an evaluative study of the concessions and programmes for the physically handicapped. Rajasthan Vidyapeeth in Udaipur School of Social Work, Pratap Nagar, Udaipur, conducted a study on the Integrated Education Scheme for handicapped children in Rajasthan in 1982-83.

Nair (1981) also compiled a list comprising of State-wise distribution of institutions for the welfare of the handicapped in India. This report showed that up to 1981 there was a total of 794 institutions for all categories of the handicapped spread out in 26 States.

The IYDP stimulated the States to plan and subsequent implementation of programmes for the integration of the disabled into the rudiments of the community by making provisions for education, care and rehabilitation of the handicapped. The keynote theme of the IYDP was "full participation and equality", and the aim was to encourage the rehabilitation of the world's 500 million inhabitants, estimated to be suffering from some kind of physical or mental handicap.

Five objectives were laid down for that year: *viz.*, (*i*) to help the disabled in his adjustment to society, (*ii*) to promote efforts to provide him with training, care and guidance and work opportunities, (*iii*) to encourage research for training, (*iv*) to facilitate day to day life of the disabled, (*v*) to educate and inform the public about the disabled and (*vi*) to promote effective measures for the prevention of disability and rehabilitation of the disabled.

National communities for IYDP were established in 32 developing and industrialised countries. The Advisory Committee of IYDP consisting of 23 member countries of the UN considered the elaboration of a long-term action oriented programme.

The World Congress of Rehabilitation International took place in 1980 at Winnipeg, Canada, which was attended by 4,000 rehabilitation professionals and persons with disabilities from 85 countries. The UNICEF, at its Executive Board meeting in June, 1980 endorsed a strategy for the handicapped children in the developing countries with measures for early prevention and intervention of disability. This strategy envisaged handling the problem of disability as part of primary health care and other social development programmes.

The UN declaration on the rights of the disabled recognised that the disabled person has not only a right to live but also a right to work. In addition to community, the disabled must also realise that he can be a contributing member of the society. The disabled person has potential and he has the right to fulfil the potential. He has not only the right to live but also a right to work. The community as well as he himself must be convinced that he can also be contributing member of the society. Illustrious names like Helen Klelar, Beethoven have gone down in history, because of their unprecedented achievements and contributions in spite of their severe form of disabilities.

In Indian context as well some well known persons have got recognition because of their significant achievements in their respective fields. For instance, Shri Satish Gujral though handicapped with deafness, has achieved fame as a renowned artist; Shri Lal Advani, in spite of his complete blindness, served the Government of India, holding responsible positions with utmost efficiency, for the welfare of the handicapped. In fact he was entrusted with the responsibilities of the Directorship of the National Institute for the Blind at Dehradun later on till his retirement. A number of examples are also available demonstrating academic excellence of some handicapped scholars. A spastic girl showed remarkable achievement in the All-India Higher Secondary examination of 1987, the result of which has recently been announced.

A multi-pronged approach has been adopted to deal with the multifarous problems of the handicapped. Realising the need for evolving long range national policy for their welfare, the Government of India has established "National Institutes" for each of the four major categories of the handicapped in four different parts of the country with the objective of providing national level facilities in research, training, documentation and consultancy.

These national institutes are: (*i*) National Institute for the Visually Handicapped (NIVH) established in 1979 at Dehradun for an all-round development of the blind; (*ii*) National Institute for the Orthopaedically Handicapped (NIOH) established at Bon Hooghly, Calcutta in 1981 for providing vocational guidance, thereby training, and orthotic and prosthetic aids to the orthopaedically handicapped; (*iii*) The National Institute for the Hearing Handicapped founded in 1983 at Bombay to provide integrated services in the field of education, research and training; and (*iv*) The National Institute for the Mentally Handicapped (NIMH) established in Secundrabad in 1984 to impart training for the all-round welfare of the mentally handicapped.

The National Institute for the Hearing Handicapped established in Bombay is known as 'All Yavar Jung National Institute for the Hearing Handicapped' by the Government of India to deal effectively with the problems of the handicapped. The Institute is designed to be an apex organization for man-power development, research and development of suitable models of services for persons with speech and hearing problem. During the year 1984-85, the Institute drew up a blue print of its activities and set up various departments such as (*i*) Department of Education, (*ii*) Department of Audiology, (*iii*) Department of Speech and Language Pathology; (*iv*) Department of Clinical Psychology, (*v*) Department of Material Development; and (*vi*) Department of ENT. All the Departments are designed to be engaged in training, research and service programmes of the Institute.

The training centre for the adult deaf and the school for the partially deaf children at Hyderabad imparts training in vocutions tailoring, sheet-metal works, electrical wiremanship, fitting, welding, etc. Very recently a Regional Centre of this Institute has been started in Lajpat Nagar, New Delhi.

The National Institute for the Mentally Handicapped is also an autonomous body under the administrative control of the Ministry of Welfare, Government of India. The basic objectives of this Institute include development of service models suitable for various categories of the mentally handicapped and to undertake programmes for development of resources and to conduct research. The Institute has also started two Regional Training Centres in Calcutta and Delhi to initiate training programme for the in-service training of the teachers.

All these National Institutes are to serve as apex bodies in the respective fields of man-power development, growth of suitable service models and research, along with serving as premier information and documentation centres in specific areas involved including development of suitable educational and vocational aids at low cost for the benefit of the disabled. These institutes also aim at identifying jobs suitable for the handicapped persons.

The objectives of such Institutions could be varied including proper enumeration, detection and direction to utilise infrastructure and adequate protection. Voluntary agencies at national level have also established several National Federations for the handicapped persons. These are All India Federation for the Deaf at Delhi, National Association for the Blind, and Federation for the Welfare of the Mentally Retarded (FWMR-I), at Delhi.

All India Federation for the Deaf was established in 1955, and it provides some significant services for the welfare of the deaf by establishing a Multi-purpose Training Centre for the deaf. It has also brought out a publication 'Mook Dhwani' in 1968. Government of India also established Audlt Education Training Centre for the Deaf at Hyderabad in 1962. The All India Institute of Medical Sciences (AIIMS) New Delhi has a Rehabilitation Unit in Audiology and Speech Pathology since 1965. Sri Rajendra Prasad Opthalmic Unit is also situated in AIIMS.

There are other national bodies engaged in training and service programmes for the handicapped. Such organisations set up over last two decades, aimed at training of manpower required in the areas of speech, hearing and locomotor disabilities, *viz.*, (*i*) All India Institute of Speech and Hearing, Mysore, (*ii*) All India Institute of Physical Medicine and Rehabilitation, Bombay, (*iii*) Government Institute of Rehabilitation and Artificial Limbs, Madras, (*iv*) The Institute of Physically Handicapped, New Delhi, (*v*) The National Institute for Prosthetic and Orthotic Training, Bhubaneswar.

A new perspective in rehabilitation programme was started in India with the help of an expert team of WHO in 1963 in which a detailed study concerning the requirements of the disabled in India was undertaken. As a direct consequence of the recommendation of this team, the Artificial Limbs Manufacturing Corporation of India (ALMCI) was incorporated by the Government of India in 1972 under the financial sponsorship of National Defence Fund. The factory started its production in 1976, a modern plant was established in Kanpur. The National Institute of Prosthetic and Orthotic Training (NIPOT) established in Bhubaneshwar has a modern training-cum-fitting centre with clinical facilities to meet the growing need of highly skilled prosthetic and orthotic technicians and bio-engineers. During the IYDP, the Ministry of Social Welfare sanctioned Rs. 18 lakhs to the ALMCI to subsidise provision of Aids to the disabled.

Quite a number of Rehabilitation Service Centres are also engaged in research, such as, (*i*) All India Institute of Medical Sciences, New Delhi, (*ii*) Sawai Man Singh Hospital, Jaipur, (*iii*) Medical College, Trivandrum, (*iv*) Regional Artificial Limb Centre, Lucknow, (*v*) St. Martha's Hospital, Bangalore, (*vi*) National Institute of Mental Health and Neuro-Science (NIMHANS), Bangalore, (*vii*) Nair Hospital, Bombay and (*viii*) S.S.K.M. Hospital, Calcutta.

A country-wide sample survey of disabled persons was launched by the National Sample Survey Organisation (NSSO) in 1981. State-wise survey of the Welfare programme of the handicapped has been made from time to time covering a wide range, such as (*i*) Special Education, (*ii*) Implementation of

Integrated Education Programme, (*iii*) Scholarship scheme, (*iv*) Vocational Training Facilities, (*v*) Job Reservation, (*vi*) Age Concession, (*vii*) Travel concessions, (*viii*) Voluntary Organisations, (*ix*) Institutions available for the handicapped, (*x*) Provision for preventive measures, in addition to Sample Surveys. A special publication on "Administration for the Disabled, Policy and Organisational Issues" was brought out by Indian Journal of Public Administration in 1981 (Chaturvedi, 1981).

Society for Rehabilitation and Research for the Handicapped was established in Delhi in 1984. There are around 25 special employment exchanges and about one dozen rehabilitation centres for the physically handicapped. The Government of India established first special employment exchange programme for the physically handicapped during the sixth decade of the present century. Estimated number of blind persons in India is about 9 million out of which five million are said to be suffering from curable blindness, while the rest are conceived to be incurably blind. About 40 per cent of the latter group consist of children only. There are about 16,00,000 blind children of school going age, mainly living in rural areas. However, only about 200 schools, industrial homes and workshops are available for catering education of about 16,000 blind persons. But most of the institutions and associations for the blind are located in urban areas. Thus the rural handicapped never gets its equitable share in terms of care and training for rehabilitation.

The National Association for the Blind first started in 1954 an ambitious project of open employment for the blind. The National Association for the Blind also helped in the establishment of Employment Bureaus specifically for the blind which helped about 3,000 blind persons in securing jobs. However, more than 75 per cent of the blind live in villages in India. The National Association for the Blind have taken up projects for providing services to the rural blind. At present there are about 120 schools which are intended to impart education to about 10,000 deaf-mute children in different States. Estimated number of deaf-mute children is about one crore, out of which 20 lakhs are in the school-going age. This clearly shows the number of schools available for education of the deaf is indeed very insignificant. There are about 45 Associations engaged in the vocational and social rehabilitation of the deaf.

A very important step was undertaken by the Government of India to reserve three per cent of the vacancies for different categories of the physically handicapped in all Government Departments and Government Undertakings. The Ministry of Health and Family Welfare laid down certain guidelines to evaluate the physical fitness of the disabled who apply for the jobs (mainly for C and D category posts) earmarked for them.

The Ministry of Railways has permitted payment of only 25 per cent of the normal fare for all categories of the handicapped in the Railways since 1981. This Ministry has also sanctioned 50 per cent concession in the first and second class monthly season tickets meant for the orthopaedically handicapped and mentally retarded along with their escorts. The Railway Budget for 1987-88 has also provided the extension of the existing 50 per cent concession in first and second class single railway fares for the deaf and dumb to season tickets as also to the blind, the orthopaedically handicapped and the mentally handicapped.

From January 1987, it has been reported (see Habibulla, 1987) that the mentally handicapped and the orthopaedically handicapped students are to receive 75 per cent fare concession in all fares and second class fares for attending educational or treatment institutions along with one free-of-cost escort for the handicapped students. The percentage of reservation of vacancies existing in South Central Railway has been raised to 15 per cent of the vacancies, *viz.*, 5 per cent each for the blind, the deaf and dumb and the orthopaedically handicapped, with the age relaxation of up to ten years. Both Air India and Indian Airlines Corporation also provide certain relaxation in age, and in physical fitness all over the country. Moreover, the Ministry of Civil Aviation provides 50 per cent of fare concession in the Air India/Indian Arilines flights for blind travellers. The Delhi Transport Corporation (DTC) also provides free travel for the handicapped within the Union Territory of Delhi. Other State Corporations provide 50 per cent concession to the handicapped community including inter-State travels. The concessions and programmes initiated by various banks are also in tune with Centre and State levels. All the nationalised banks are disbursing differential rate of interest loans up to Rs. 6,500 without any surety for the self-employment of the handicapped persons.

The Ministry of Communication, Department of Posts and Telegraphs has opened public call office (PCO) Telephone Centres for the handicapped charging a concession rate of 30 paise only per call from them, and most of these booths ar also manned by the handicapped. The letters of braille scripts meant for the blind people are also exempted from affixing postage stamp.

The Central Government has also introduced conveyance allowance of about 10 per cent of the basic pay, subject to a maximum of Rs. 75 per month to its handicapped employee with disability of 40 per cent or more. Details of such concession in respect of consumption of petrol/diesel exemption of road tax have been recently brought in (See Habibullah, 1987).

Government employees with gross handicap are also entitled forout of turn allocation of Government accommodation. The Delhi Development Authority (DDA), under the Ministry of Urban Development, has also reserved 5 per cent of shops, one per cent of residential plots and one per cent of flats, for the disabled. At State levels also all the Development Authorities, Improvement Trusts have reserved 1.5 per cent of allotment quotas for the disabled candidates.

The scheme on Special Employment Exchanges, started in 1957, first in Bombay, is one of the important steps taken for the recruitment of the physically handicapped. The objectives of such employment exchanges are to provide placement facilities for the physically handicapped for gainful employment, and to refer such persons for different jobs on the basis of their ability to do the job and to follow-up statutory provisions of three per cent job reservations for the employment of the handicapped. Being inspired by the measures of success achieved by this special Exchange, the Government has set up another set of 22 such employment exchanges in major cities all over the country, with the idea of having atleast one such exchange in every State. In addition to this, the Ministry of Welfare has also established 41 cells to help the handicapped in finding jobs in rural areas. Not less than 14 vocational rehabilitation centres have also been established functioning in some of the major cities like Ahmedabad, Bombay, Bangalore, Bhubaneswar, Calcutta, Delhi, Guwahati, Hyderabad, Jabalpur, Ludhiana, Kanpur, Madras, Trivandrum and Jaipur for providing educational facilities and vocational training. The types of skills undertaken for the training and development include electronics, general mechanics, air-conditioning and refrigeration, book-binding, canning, cutting and tailoring and special training pertaining to rural areas.

Many State Governments, *viz.*, Haryana, Himachal Pradesh, Maharashtra, Orissa and Rajasthan provide unemployment allowance to the handicapped. The "Handicapped Welfare Corporates" have been established in Kerala and Andhra Pradesh. The Tamil Nadu Government has made relaxation in age and educational and experience requirements as also exemption from application fee in the case of handicapped persons seeking employment.

The Department of Education, The Ministry of Human Resource Development has made provisions for special pay for the engagement of Readers for the blind scholars as also relaxation of 10 per cent of marks for the disabled persons' admission in Colleges.

The Government has initiated a Scheme for the distribution of "Arts and Appliances" (within the price range of Rs. 25 and Rs. 1,500) to the poor and needy handicapped persons at 50 per cent concessions through 42 agencies divided under four zones of North, East, South and West. To make facilities easily available, the Government has also made provision for payment of travelling costs for out-station handicapped and his escort, for coming to such agency including payment of boarding and lodging charges at Rs. 30 per day up to a maximum of 15 days (Employment News Saturday, 14 March, 1987). A number of handicapped persons have been benefited from such schemes.

National awards for handicapped welfare have been instituted by the Government of India for outstanding handicapped employees and those employers who rehabilitated more handicapped persons as employees in their organisations. Ever since 1969, the year of institution of such awards, there has been an increasing response to the scheme. It has been claimed that maximum number of proposals for awards have been received in the current year in all categories making in total of 160 proposals, out of which 69 belonged to the government sector, 42 from the public sector and 49 from the private sector. Similarly there were 8 proposals for awards for placement officers, 27 for the best institutions and 26 for the individuals working for the cause of the disabled (Employment News Saturday, March 14, 1987).

It has been reported that this year Shri Palanpur Shishushala Balmandir and Education Trust, Banskantha at Gujarat and the Spastics Society of India, Bombay, shared Rs. one lakh as prize money for the best voluntary agencies working for the welfare of the handicapped. This Education Trust working since 1948 in the field of education and vocational training, is at present devotedly running joint schools for the blind, deaf, mentally retarded and orthopaedically handicapped at Palanpur in a backward district called Bansakantha in Gujarat. The Spastics Society of India is working since 1972 in the field of education, therapy, treatment and rehabilitation of Spastics. In addition to pioneering work in Bombay, it has now service institutions at Delhi, Haryana, Calcutta, Bangalore, Guwahati and Madras.

For the best individual, the national award for Rs. 20,000 also is being shared by Dr. D.K. Nandy, Hony. General Secretary of the All India Federation of the Deaf, New Delhi and Dr. S. Jones, Hony. Director of the Home for Handicapped Children, Trivandrum. Dr. Nandy himself born deaf, is working for the deaf over the last four decades with utmost devotion and keen interest. Dr. Jones, a scientist and himself a polio victim is associated with the Home ever since its inception in 1974. About 100 polio effected children are being treated annually in this Home; and it has become a model for the orthopaedically handicapped.

Eleven employers from the State, public and private sectors are also being given awards for not only employing larger number of handicapped persons, but also treating them with humane concern. Similarly 30 employees from the State public and private sectors, belonging to different categories of the handicapped are to receive cash awards.

INTEGRATED EDUCATION FOR THE DISABLED

The problem of handicapped children are many and varied. Therefore, it is not possible to undertake a unitary programme of education and training for all of them. In order to be effective, several plans are devised from time to time considering the varied nature of the problems of different groups of handicapped children. Traditionally, the disabled are admitted in special schools, day care or residential schools. However the number of such special schools are not large enough to have a wider coverage. Besides, looking into the magnitude of the problem, neither it is possible nor desirable to impart education and training to them through special institutions. Moreover not all such children need special education; a sizeable number of them can receive education in regular schools along with normal children.

The National Policy of Education, 1968 emphasized the need for educating the handicapped children in regular schools, developing integrated programmes of education. Considering the benefits of placement of handicapped children in ordinary schools, the Government of India sponsored the scheme of Integrated Education for the handicapped in 1974, providing basic resource facilities in selected educational institutions in the form of resource rooms, free supply of books and purchase of additional equipments, as also provision of special pay for the teachers dealing with the handicapped. In the Sixth Plan period, the scheme was modified by the Government of India to bear the entire cost. The scheme provides educational facilities in the integrated setting for the different categories of the handicapped children, *viz.*, the blind and the partially sighted, the deaf and hard of hearing cases, the orthopaedically handicapped, neurologically handicapped and children with multiple types of handicap. The scheme is to be implemented through State Government (Department of Education), as also through Central Schools, Army Schools and other voluntary and co-operative organisations. The salient feature of the scheme is to provide education of specified groups of educable, but disabled children, in the age range of 5-14 years in ordinary schools along with normal children. As per revised guidelines, the scheme has several noteworthy incentives such as payment of Rs. 400 per child per year as book and stationery allowance, Rs. 50 per month per child as transport allowance. The implementing schools also are given funds for purchase of special equipments, appointment of special teachers and for undertaking necessary and appropriate building constructions.

The major institutions implementing the integrated education scheme in Delhi are: The Directorate of Education, Delhi Administration, 7 Senior Secondary Schools, and the Municipal Corporation of Delhi in 15 Primary Schools. The evaluative study conducted in Union Territory of Delhi for the centrally sponsored scheme of Integrated Education (Summary report, 1982) reported that the total number disabled children benefiting from the Scheme in these schools was 258 during the year 1980-81. Of them, 43 were orthopaedically handicapped, 12 had impaired speech, 198 were mentally handicapped, and one was partially sighted. The selected MCD schools catered exclusively to the mentally handicapped children.

The introduction of the scheme created an awareness among the educational administrators, principals and teachers about the abilities, capabilities and difficulties of the disabled children for full participation alongside with normal children in ordinary schools. As a result of the experience and exposure to integrated education, the Heads of the schools and the teachers have developed a sympathetic attitude towards the disabled children.

Integrated Education for the Disabled is one of the most potential programmes for reaching out this group in rural and urban areas. The programme is gaining ground in pursuance of the National policy on Education and National Policy on child. The development of infrastructure including curriculum, instructional materials and training programme of the special education teachers are also underway.

In pursuance of the new National Policy on Education, in order to provide integrated education to the handicapped, the Government of India has identified six centres—Jamia Millia Islamia (New Delhi), Ramkrishna Mission Vidyalaya (Coimbatore, Tamil Nadu), Banaras Hindu University, Poona University, SNDT University (Bombay) and Utkal University (Bhubaneswar)—to run teachers' training programme under the guidance of National Council of Educational Research and Training (NCERT) which assists in evolving such programmes.

In the Third Plan, the Government of India initiated a programme to establish Regional Centres for the training of the teachers. Accordingly, four Regional Centres were started at Delhi, Bombay, Calcutta and Madras offering one year training course to the teachers working in the schools for the blind.

The concept of integration of the disabled child in an ordinary school is not exactly new. Infact, in countries like England, this was started several decades ago. Though in India it was introduced in 1968 for the first time, only in recent years it is being considered with a new priority basis.

Earlier establishing of special schools was the only answer for educating the disabled. However, in contemporary times, attempts have been made to start special classes for the disabled in regular school environment. The idea was mooted by concerned parents and educationists as it aimed at stimulating teaching-learning experience with which children would flourish socially and academically. It was expected not only to save expenditure, but also to create appreciation and understanding among the able bodied normal children about the problems of the physically handicapped. It was expected to bring a scope for exchange of experiences in regular school environments and to enhance acceptance, tolerance, self-image, self-confidence and meaningful communication. Simultaneously, it was also expected to effect minimisation of the possibility of negative social image of the disabled in the community.

One direct impact of the IYDP was the initiative taken by the States to plan and implement programmes for the integration of the disabled into the socio-economic fabric of the Society by making provisions of education, training and rehabilitation facilities. The process of integration, mainstreaming or normalization of the disabled emphasizes interaction of the handicapped with their normal peers in educational settings. The main objective of the programme is to encourage in natural contact and communication among the same age group children, whether handicapped or otherwise. Integration aims at an overall integration, both in terms of academic and social development.

The Ministry of Welfare, Government of India plays the key role of framing policies and programmes for the handicapped. A National Council on Handicapped Welfare has also been set up to frame nation wide policy guidelines and to determine priority areas in the welfare programmes for the handicapped. The voluntary sector has a continuing dominant role in welfare services for the handicapped.

It has often been said that disability will create a cost to society regardless of whether or not rehabilitation services exist. The more a society recognises this and more it attempts to ameliorate the condition through the provision of adequate disability prevention and rehabilitation services, the greater would be the overall economic return. In India, the integration programme is in the process of gaining importance in pursuance of the National Policy on Education and National Policy on Child. The success of such programmes is, however, mainly dependent upon development of appropriate infrastructure and plans and execution of integrated education. The National Council of Educational Research and Training (NCERT) has undertaken the task of development of infrastructure, including curriculum, instructional materials and refreshers' courses for special education teachers.

So far as the deaf children are concerned, four basic patterns of integration for them have been identified. These are however, not discrete, but somewhat overlapping and have their relevance in differential progressive stages of development. These patterns are out lined here.

Pattern-I involves complete integration of the disabled child in regular classes receiving support from special teachers at specific time during the week. This enables the child to receive services available to other normal children in the classroom.

Pattern-II is partial integration wherein the disabled child is enrolled in a regular class but have services of resource teacher available in the school throughout where he spends some part of his day depending on his needs. The areas covered are both academic and non-academic such as physical education, art, home economics, etc.

Pattern-III involves special classes in normal schools. Here the disabled child is enrolled in a special class, but integrated into a normal class for one or more academic subjects daily. The location of the special class may or may not be in the same building.

Pattern-IV is known as reverse integration wherein normal children are enrolled on temporary basis for some time in order to participate in academic and non-academic activities in a close environment for the hearing impaired child.

Whatever pattern is followed, the basic aim is to provide least restrictive environment to maximize the potentialities of the child and to promote normalisation of the disabled child. It is imperative that any pattern followed, should be in tune with the capabilities of the child (for instance what is possible for the deaf child, may not be practicable for a retarded blind) necessitating to have a list of alternative plans of activities. Special arrangements for the integration of the disabled child into the regular class also need to be compatible with the interests of other children in the class.

Many pre-school programmes have started in recent years with an objective of early intervention for integrating the physically handicapped with the normal child. The rationale behind these programmes is being that the non-handicapped peers would be able to function as behaviour models as also as reinforcing agents for the handicapped child, leading to social integration. This interaction is supposed to make the participants more sensitive and receptive to each other from a very tender age. The process thus started, would prepare the handicapped child for placement in regular classes later on. Early integration would foster friendliness, social development, adjustment, acquisition of language, and usage and experience with language.

The success of an integrated education programme depends on the extent of good use of the residual potentialities of the handicapped child, conducive home background, personality make-up, and devotion of the resource and itinerant teacher, the size of the class in the regular school, selection of schools, the capability, interest and aptitude of the teacher in the regular class, degree of handicap involved, and support of the community and local administration, amongst others.

THE GAPS IN THE EXISTING PROVISIONS

The foregoing section speaks a volume about the tremendous development achieved in the field of Welfare for the Handicapped. The Government of India has also recently published an Encyclopaedia of Social Work (Tirlok Singh, 1986) for the handicapped. However, in spite of spectacular achievements, facilities provided fell far short of the target project. As observed by Narasimhan and Mukherjee (1986), bulk of the facilities are mainly located in major urban areas, to the total neglect of the rural population. As further maintained by these authors, "there is still no comprehensive, organised effort in the country today to reach the largest sections of India's unserved population" . . . "In India medical and health services are provided free by the State, and handicapped individuals are also eligible for these benefits. However, facilities for rehabilitation Services in the health set-up are non-existent, and therefore there is no security for the disabled. Employees in the organised sectors of the economy have extensive social security benefits, but very few handicapped employees belong to these benefits. By and large the disabled population does not have any organised sectors; therefore in actual practice, they do not get security in the event of unemployment or other similar contingencies".

Most of the educational institutions provide primary education along with training in a few simple handicrafts as also in music for the blind. In spite of a number of scholarship schemes, concessions and other facilities for the disabled students, only a few of the children of school-going age attend schools and fewer still go for higher education. This is not necessarily always due to lack of educational facilities, but also due to prejudices and lack of information of the avenues available for them.

Very little attention has been paid to the education of the handicapped at the pre-school age. There is a great need for the provision of education at an early age and also necessary pre-vocational training and vocational facilities.

The Centre and many State Governments such as Kerala, Andhra Pradesh, Rajasthan, U.P., West Bengal, have launched programmes for the education and training of young handicapped persons. However, though the voluntary action has expanded considerably in contemporary times, not all the voluntary centres are well equipped in terms of providing comprehensive services. Though job opportunities have increased a great deal, a major section of the handicapped people remain without any job at their disposal.

The integrated education programme is supposed to be most potential for reaching out the unreachable in rural and urban areas of the community. The integrated education for the disabled though started more than a decade ago, only nine States and three Union Territories have implemented the scheme uptil now (Narasimhan & Mukherjee, 1986).

The goal of the new Education Policy adopted by the Government of India is to provide universal primary education by 1990; the expenditure in Education has secured second rank after Defence, this year. The programme is however, not without skepticism, as it is recalled that India's constitution, adopted in 1950, already called for free and compulsory education up to the age of 14 by the year 1960. But it did not materialise, because unprecedented population growth undermined the objective. Inspite of a sense of bafflement, the literary rate could be raised from less than 17 per cent at Independence in 1947 to more than 36 per cent as enumerated during the last census carried in 1981, partly with the help of non-formal education centres. It has also been pointed out that the actual literacy rate could be in fact, more than 42 per cent, if children below five years of age are excluded. Between the age group of 10 and 25, the literacy rate would be even more than 50 per cent. But the population has almost doubled to 700 million in these intervening years, and the number of those who cannot read or write has increased in absolute terms, from about 300 million to 437 million. The World Bank estimated that by the end of the century India will have the largest illiterate population in the world (Time, 1986, Sept., 15, No. 37, p. 49).

If this is the state of affair in the country, making educational provision for every handicapped child may even be considered a luxury. Millions of handicapped in rural areas are uncared for; integrated education would be the only answer to well build a system. Creation of educational facilities in or around villages will prevent migration of handicapped children to cities and towns. An integrated approach to the education of rural handicapped children will enable a large number of them to receive education. The importance of imparting education to the handicapped, for instance, to the blind, with their sighted peers will eventually facilitate their real integration into the world of sighted persons.

The object of the Special Employment Exchange is to promote through persuasion, the placement of trained handicapped persons in employment which they can perform without detriment to efficiency. However, such Employment Exchanges are unevenly distributed in various States. Moreover, only a negligible number of handicapped are registered with them; and even these Exchanges are not able to procure employments for all those registered. The existing services are not fully being utilised by the anticipated beneficiaries.

Though many State Governments have started implementing the welfare schemes with good intentions, implementation aspect of any worthwhile scheme demands a genuine concern for the cause, of all those involved. For instance, The Jayprakash Institute of Social Change at Salt Lake, Calcutta made an evaluation of Special Employment Exchange for the physically handicapped in Calcutta. It had been mentioned in their evaluative report that the newly built office of the Special Employment Exchange for the Physically Handicapped (SEEPH) is located on the second floor of the building, which is not so easily accessible to the orthopaedically handicapped to reach. It has been observed that the SEEPH makes an effort to provide employment to all categories of the disabled unemployed. However, the new office of the SEEPH located at new C.I.T. road, Calcutta, "provides by itself, an epitome of an erroneous decision that by its very location in the second floor works not for, but against those whom it seeks to help". The report further states, "the new office of the SEEPH is located at the second floor of the building in a dismal situation. There is no drinking water available for the disabled, who come for seeking the jobs and to register their names. Neither is there toilet facilities, nor any fans for the summer, or adequate lighting for all time of the day. What is more, while there are many candidates who have to turn up every day to 'follow up the application' they have failed, there is no space, not even enough benches not to speak of chairs, for them to sit upon. For it is difficult enough exercise if not a horrible experience, for the handicapped, to climb to the second floor; and then to wait for hours there could be nightmarish".

This institute also made an evaluative study of the schemes and concessions for the physically handicapped in West Bengal. On the basis of several studies, it has been reported 'that the physically handicapped persons can be made an important and vital manpower resources acting as a lever to countries' progress with scientific approach to their problems and understanding of their needs. This aspect of manpower utilisation of the physically handicapped persons is gaining ground in some progressive business houses and factories besides the Government Departments".

The Government of India and different State Governments are making strides in offering schemes and concessions. However, to what extent the beneficiaries, particularly in rural areas and urban slums, are receiving these facilities to their best advantage and utilisation, deserve a deeper probe. The President of the Indian Medical Association, D.V. Parameshwara observed that three out of every 200 people in our country are blind, and nearly one-third of the affected cases could be treated rightaway by administering vitamin-A, costing less than one rupee per person. He further added that in order to achieve this, there is a need for political will, committed bureaucracy and devoted professionals. Parameshwara highlighted the fact that 48 per cent of our population, 65 per cent of which are toddlers from socio-economically backward classes, were suffering from malnutrition even as five million eggs were used in shampo manufacturing every day (Indian Express, New Delhi, July 20, 1986).

The policy of employment reservation for the handicapped, as also various other concessional schemes are by themselves, not sufficient to solve the gamut of problems encountered by the disabled. As Cruickshank (1952) maintained, the handicapped are under two kinds of pressure, *viz.*, new psychological situations, and overlapping psychological roles. It may so happen that the experiential background and capacity to cope successfully with a wide variety of situations probably has not been permitted to develop. If the disabled has been identified with his disability, it would lead to frustration and conflict with emotionality and disruption in behaviour. The disabled not only need vocational training and guidance but also a sympathetic attitude and congenial social atmosphere.

Essentially, total rehabilitation of the disabled is an integrated programme in which medical, educational, psychological, social and vocational services are geared together in a continuous process. There is still a tremendous scope to integrate the services for the physically handicapped with the services already existing for the normal individuals on the part of the Government and voluntary agencies. More vigorous efforts are needed to develop well integrated welfare programmes for early detection, treatment, education, training and rehabilitation, as an integral part of other welfare systems.

The voluntary organisations need to develop appropriate community development programmes for making the normal individuals understand both with empathy and sympathy the problems of the handicapped. The role of the community needs to be highlighted in the development of an all round service programme. Such a strategy would establish a parity between the handicapped with their normal peers. Educational measures and techniques of persuasion need to be utilised for an overall integration of the handicapped into the society.

Any rehabilitation programme can achieve its goal only when there is a co-operation from the society in the implementation of their programme. The first step in this direction would be to change the attitude towards the disabled, only then one can think of total integration and rehabilitation of the handicapped.

Legal Provisions for the Disabled

India has virtually no legislation concerning the handicapped. There is an urgent need for a special Act to deal with the disabled of different categories for their legal protection and safeguarding of interests.

The Indian Constitution guarantees that disabled have the same rights at par with other members of the society to participate in all socio-economic activities. The Declaration of the Rights of Disabled person by the United National general Assembly in 1975 gave an impetus to disabled persons in all developing countries to demand legislation to establish their rights and privileges (An extract of the Declaration is given in Appendix-IV).

However in spite of Constitutional guarantees, some legislative provisions are available, in various enactments, wherein discrimination is made against disabled citizens. For instance, under the Indian Lunacy Act of 1912, the mentally handicapped are sometimes confused with the mentally disabled persons, and accordingly, the former is also arrested under certain circumstances in the name of safeguarding the society. The provisions under laws in India very often act against the interest of the disabled persons. Some loopholes have also been pointed out elsewhere by Narasimhan and Mukherjee (1986). A persistent need is being felt for formulating comprehensive legislation to provide all an round security, including education, vocational training, employment and other welfare measures, for the disabled. The Central Government and most of the State Governments have reserved vacancies, according to the policy of the National Government. However, these provisoins are not guaranteed by law. The implementation of the reservation policy is through executive orders which are equally binding on the public sector employers.

The Indian Government has also decided to set up a Rehabilitation Council through legislation to regulate training policies and programmes for professionals involved in the process of rehabilitation. However, regulation would not be enough to tackle the unemployment problem, particularly in a country where there is a large number of able-bodied youth still unemployed. Designated employment and reserved job programming in accordance with to the ILO, even if implemented, would provide little relief. Furthermore, most of the jobs under reference, are usually low-paid and menial jobs; only one per cent of 'C' and 'D' category jobs are reserved for each of the blind, the deaf, and the orthopaedically handicapped. The ILO recommended that legislation concerning employment of the disabled will have a better chance to be effective, if it were more flexible and formulated in such a way as to stimulate private and governmental initiative.

A law to protect the mentally handicapped from exploitation now seems to be in the offing. The Federation for the Welfare of the Mentally Retarded in India (FWMR-I) is keen to see that penal action is taken against those who exploit the mentally handicapped as partners in crime, etc. Many a times the mentally handicapped from the affluent families are deprived of their rightful inheritance The FWMR-I had planned a National Trust to be gradually extended into several Trusts region-wise to safeguard their interests and to create teaching facilities for the mentally handicapped. The Federation is also considering putting up of a Human Resources Development Trust at a 25 acre site near Bangalore (FWMR-I News Letter, 1986).

There are about 70 million handicapped population in India with an annual increase in the number by about five lacs. Majority of them have a bleak future for want of medical, educational and financial aid. India has the second largest blind population in the world, after Egypt. About 30 per cent of the blind lose their eyesight before the age of 21, mostly because of nutritional deficiencies. The UN Action-oriented Plan undertaken by the end of 1981 leading to national plans for the follow up activities, is supposed to be appraised by 1991. An appeal was also made to review the existing legislation and to enact new legislation for eliminating any possible discriminatory practices in respect of education and training of the disabled.

A few countries like Japan and Sweden have appropriate laws for the protection of the disabled. In Japan the law imposes upon the State and local organisations to accelerate investigation and research concerning the cause of the disability and prevention of physical and mental handicaps. The law also calls for strengthening of health services for the mother and the child for early detection of any untoward condition liable to produce mental or physical handicap, with a view to promote early treatment and other necessary measures for prevention or to reduce acceleration of the handicapping condition. The State is also legally bound to provide security and necessary life long protection to severely handicapped.In Sweden an Act was promulgated in 1968 for provisions for the mentally retarded granting them full civil rights.

In India various schemes and concessions existing in one form or other in the areas like job reservation, preventive measures, disability insurance and compensation, right to education, technical aids, transport concessions are somewhat discretionary for different organisations concerned. Legislation needs to be urgently enacted in India to make these and some more provisions for the handicapped and to impose obligatory responsibility for all concerned including State, public and private sectors of the society.

MANAGEMENT OF THE PROBLEM OF DISABILITY

The problem of disability needs to be tackled from two distinct perspectives: Prevention and Rehabilitation. *Prevention* is the major step for tackling the problem of the disabled.

About one-third of the world's disabled population are children. It has been estimated that there are about 140 million disabled children in the world, 80 per cent of whom are from the developing countries who have virtually no access to any kind of rehabilitation services. Therefore, one important way to tackle the problem is to take adequate measures of prevention.

For adopting preventive measures, it would be necessary to know the causes of disability. Depending on the type of disability, it can be due to hereditary factors or environmental factors. Causes could be extremely varied, depending on the type and nature of disability. However, some common causes are often cited which have adverse consequences leading to diverse forms of disabilities. Preventive measures may be taken for these general causes. Some of the major causes of disability among children have, indeed, been identified.

Inadequate nutrition of pregnant and nursing mothers and children, including vitamin deficiencies have far reaching consequences. Knowledge about the importance of nutrition particularly at crucial years, is pathetically poor at various levels. Abnormal conditions during pre-natal, ante-natal and post-natal stages, such as mother's infection of inappropriate substances during pregnancies, pre-natal damage, genetic factors and damage at or just after birth are also some of the major causes. Besides these, infectious diseases, accidents and various other factors, including environmenal pollution such as Bhopal gas tragedy of 1984 or Chernobyl disaster in Russia, war, man-made disasters, consanguinity, exposure to nuclear radiation are some of the causes often lead to impairment and disability.

Closely associated with these causes are conditions of ignorance, poverty and accidental and environmental hazards which invariably affect the poorer sections of the society adversely. Information about the causes of disability would lead to its prevention and possibilities of rehabilitation.

Inter-relationship between children's disability and poverty are far more extensive and damaging than had been anticipated. Closely linked with ignorance and poverty is the inability to have an access to appropriate services. The principal causes of disability, such as inadequate nutrition, child birth under unhygenic and improper conditions, infections and accidents are far more likely to affect the ignorant and the impoverished. The poorer sections of the people have least access to the whatever services existing in the society, either because of ignorance, superstitious beliefs or by sheer reason of difficulties in reaching the servicing organisation, because of physical distances.

The impairment of about three million children could be prevented or minimised by adopting some simple measures which are potentially available within the capabilities of their families and communities. The need for nutritional diet both for mother and growing children need to be widely publicised. The need for vitamins and minerals for healthy development should be emphasised, Deviation and interruption of the normal child developmental process have serious consequences; any deviation from normal process of child development should not be allowed for continuous period.

Immunisation against known infectious diseases may be persuaded. Health, nutrition, education and social welfare services should incorporate these measures within the community-oriented activities to prevent any type of impairment in children.

When impairment nonetheless occurs, prevention of its escalation to disability or handicap needs to be ensured so that maximum possible opportunities for normal development is provided. This would imply provision of support for the family which is the optimal place for the child's normal development. Secondary effects of impairments which ultimately lead to disablement, also need to be prevented. Children need to be protected from accident hazards.

Any action programme undertaken, should include prevention of impairment through adequate nutrition programme for the child and the mother, improved medical services, availability of pre-natal care, immunisation and precautions against accidents.

Congenitally nine out of ten children are born healthy and respond well to the environmental stimulation around them. One in ten, however, is born 'at risk' whose ability to live a normal life depends upon the manner he is viewed and treated by others around him in the society.

The Government of India has launched a number of programmes for prevention of disability throughout the country. Some such measures taken, include titanus-immunisation for expectant mothers, diptheria titanum toxoid and Purtussis vaccine, diptheria toxoid immunisation for children, prophylax' is against malnutrition and blindness due to vitamin A deficiency, vaccination against polio and typhoid. National programmes have also been undertaken for prevention and control of blindness, the supply of nutrients as also educative programmes for expectant and nursing mothers through mass-media, such as Television, in respect of child health and nutritional practices.

Despite medical advancement, the scope for prevention of disability has not yet reached its zenith. However, life for children, already handicapped, has been and can be made easier through a range of aids to assist and ameliorate the conditions of those with sensory, physical or intellectual handicaps. It seems reasonable to assume that the disabled would benefit from technological advancements that benefit the general mass. So far as education is concerned, disabled children and adults seem certain to benefit from further advances in information technology. The Government of India has set up a major facility for mass-scale manufacturing of standard quality aids and appliances such as orthotic, prosthetic and rehabilitation aids required for the orthopaedically handicapped. This Organisation is claimed to be first of its kind in the whole of South-Asian sub-continent. More and more use of computer-based terminals and computer-aided design equipment would ameliorate the disability condition of the disabled. The benefit of computer-age technology is being increasingly used in different spheres of human activities all over the world. Wide variety of the use of the computer for the benefit of the handicapped, though not yet imminent in Indian context, some western countries are experimenting with a number of possibilities. It is however, necessary to recognise the fact that whatever happens to bring about advancement in new information technology that are beneficial in educating the disabled, the human element in their education can never be underestimated. The issue of automating the education of the disabled any more than that can be for normal persons, is simply not tenable. The skill, patience and dedication of professionals who deal with the disabled will always be of paramount importance; and no technology can replace it, as Technology as such cannot provide a human caring environment.

Need for Early Identification

The need for identifying the handicapped at an early age cannot be overemphasised. An early identification of the problem would help in better rehabilitation and integration of the handicapped into the society. However, to screen all children all over the country for identification of possible handicapping conditions in them may be an ideal proposal, but certainly not possible in practice. Hence, linked with this there is a need to adopt appropriate methodology economically sound and effective enough to identify as many handicapped children as possible at an early stage. In this respect, the parents and teachers have a major role to play.

Role of the Family

Interruption or distortion of the normal developmental process of the child is liable to be noticed first by the family. For instance, in respect of hearing process, the reaction of infants to sound sources is somewhat reflex in nature during the first six months of life. A sudden loud sound would produce startle reflex in him. Similarly during the second six months, sounds like mother's voice, lullaby, rattle etc., would please him and he would make efforts to locate the source of sound. Towards the end of first year the child babbles incessantly uttering a few words like 'Mum'-'Dad' etc. However, if the child is deaf, the mother and others in the family would notice absence of any babbling of the child or gradual diminution of the child's vocalisation, though he may be visually alert.

Again during the second year of life, a child, if he is partially deaf, would be unable to hear the high tone consonants like F, Th, S, Sh, Ch, etc. As a result though he would be able to speak, his speech will remain unintelligible, as intelligibility of speech is determined mostly by consonants. During the third year, the difference between a normal child and a hearing impaired child would be most apparent as the normal child keeps on speaking while a deaf child, in spite of being alert and intelligent, does not speak.

Sign of deafness in the child can be detected by the mother at a very early age from the symptoms like failure of the baby to respond to sounds especially mother's own voice or lack of facial expression at about the age of three months. This may be followed by failure to use voice normally or failure to talk, or to have defective speech at later stages. Thus if the parents have the background knowledge about the normal process of speech development, it would not be difficult for them to apprehend and detect signs of deafness, if any, in the children at a very early age.

Similarly, with the knowledge of the growth and developmental patterns of the child, any significant distortion in the developmental milestones can be suspected by the parents for being an indication of mental retardation. Identification of the presence of Down's syndrome (a specific type of mental retardation) in the child, for example, would be relatively easy for the parents, because of special facial and bodily features associated with it.

Mother is the first person to observe closely the child developing from stage to stage in his growth and maturation process. She along with the other members of the family are first and most suited persons to detect presence of any deviation or disability in the child. Children showing some such preliminary hunch, come under 'at risk' group and they need to be tested by professionally qualified personnel. For this purpose the health visitors or trained medical social workers' help are to be sought. The handicapping conditions can be identified even though imperfectly, by some relatively simple measures potentially available within the capabilities of the respective families and communities.

The parents of a handicapped child initially start disbelieving the existence of the suspected disability. Following this they feel impelled to hunt for an easy and quick cure. They start shopping around at all possible places with a vague hope of getting a readymade solution. The parents undoubtedly want to do the best to get the disability rectified. Though most parents try to get medical help by visiting one hospital from another, some times they do not even hesitate to visit quacks or other unscientific sources out of superstitious beliefs, because of a burning desire to see their child able-bodied and well adjusted in life.

Considerable amount of valuable time, money and effort are lost in the process, delaying and diminishing the scope of amelioration of the condition involving early education and training for rehabilitation of the child into the society. In the process, if the child who is not medically curable or only partially curable, becomes a late entrant to the school and often starts showing signs of slow learner. This situation is almost invariably results in a discrepancy between chronological age and mental age in the wrong direction which has often been found during the psychological assessment of the handicapped child's potentialities.

Establishing faith and confining only with competent professionally qualified personnel would be the right perspective towards facing the challenge of multiple problems associated with a handicapped child. Once the diagnosis is established, it becomes incumbent on the parents to undertake to ameliorate the conditions by providing him appropriate training at the earliest possible age with assistance of trained teacher and other personnel.

Integration at school level, as such, cannot be complete by providing various forms of integrated education in the regular schools. The integration needs to start from the family itself. Research evidence is available to indicate that the handicapped children whose parents had realistically accepted their disabilities, displayed no symptoms of emotional maladjustment and had imperceptibly merged with the mainstream of the society. They even became able to compensate for their shortcomings by constructive channelisation of residual potential in other areas. Things are, however, very wrong when such children fail to develop a sense of belongingness in the family. They either 'withdraw' themselves from the society or/and develop a sense of rejection and even guilt.

Home training is one of the most important programme for preparing the young handicaped for regular education setting. During pre-school years (about 2-4 years of age) parents emotional support can prepare the handicapped child for integration programme at a formal level. They have the greatest responsibility in gradual unfolding of total personality of the child. By developing an increased sensitivity to their special needs, parents can create a home environment conducive of encouragement and assurance which would help them to face the outside world which is not necessarily always so friendly.

They would be able to adjust themselves in the neighbourhood and community, schools and institutions, and finally in the world of work.

Role of the Teacher

The teacher dealing with the handicapped child has multiple roles to discharge, such as counselling of the parents, teaching the child, acting as a welfare agent in the society, and discharging the role of an official for the State or local administration. A teacher for the handicapped is a special teacher who can be looked upon perhaps as a researcher as well as one who is engaged in documenting experiences encountered in educating the apparently ineducable child. He has a significant role in the process of integrating the handicapped child in the society. For this purpose, he himself has had to acquire special educational training, special skills and knowledge to deal with the handicapped child. He needs to be understanding in nature with an insight into the multifarious problems of the handicapped. He also needs to have constant updating of knowledge in respect of theory and practice of teaching the handicapped child. This would enable him to apply new techniques and skills in teaching methodology discovered through research and experiences.

For this purpose, the teachers of the handicapped need special training for teaching the handicapped, they would also be immensely benefited, if some refreshers' courses or orientation courses are organised for the teachers of the handicapped from time to time. This would provide an opportunity to them to refresh their knowledge and skills gained during training. An interdisciplinary approach towards better understanding of the problem can also be ensured through such refreshers courses. Moreover, the teachers would also get an opportunity to be acquainted with the latest developments in educating the handicapped. This would also bring a unique opportunity to them for an intimate interaction with the fellow teachers facing similar and varied problems in connection with the teaching of the handicapped in different organisations all over the country.

Teachers participating in such refreshers' courses would come from different backgrounds in terms of place of work and professional experiences. They all would undergo together a learning experience helping them to evolve a wider perspective of their individual role, encouraging in self-expression and somewhat self-directed learning for their own professional growth. This would also enable them to appreciate their roles in creating greater public awareness of the problem. Realising the need for such orientation and refreshers' courses, a number of such courses are being organised from time to time all over the country.

Role of the Community

Institutional care is not necessarily ideal for the disabled. Besides, institutional and professional care is expensive, and can serve only a small section of children. It would be worthwhile to launch programmes for the disabled which would use the resources to be made available mainly in the family, supported by the community. Referral services may be developed to deal with the cases which are beyond control, either of the family or the community.

Thus as institutional and professional care of the handicapped is quite expensive, programme for the disabled needs to use resources which can be made available in the family. When any kind of impairment occurs in a child, it would be necessary to prevent its escalation to disability or handicap by ensuring greatest possible opportunities for normal development of the child as far as practicable. This would need provision of support for the concerned families, as these are presumed to be the appropriate places for such developments to be brought about. The disability of a child either at birth, or acquired later in life, places more strain in the limited resources of the family, making the family feel all the more helpless and thursting it further down into the clutches of poverty.

It is however, not uncommon to observe that within the family, often the disabled child receives the poorest of attention in terms of his daily needs including medical care, intellectual and social stimulation or education, even though these benefits are usually accrued to his siblings. A concerned attitude need to be developed towards the handicapped at all levels including the family and the community. An optimum allocation of available resources needs to be ensured, supported and reinforced by the community. Referral services need to be developed for those cases which cannot be dealt with, within the family and community.

CONCLUDING REMARKS

The main goal is to bring about effective measures to promote academic development and vocational possibilities, achievement, self-sufficiency and independence of the disabled. Parents, educators and administrators are to work hand-in-hand in order to achieve the marvel of integrated programme for psycho-social adjustment of the disabled into the society.

Thus in a number of ways the rehabilitation of the disabled can be effected through all-round education, development of personality, social integration and economic self-sufficiencies. The needs of the handicapped are not basically different from those of the other children. They also have need for love and affection, self-respect, and self-reliance. They also want to explore the physical world and establish meaningful and satisfying relations, economic independence and want to live as social beings like others. However, more often than not the disabled face a variety of adjustment problems, including physical, psychological, educational, vocational and employment problems. The most difficult problem, that they confront, is the adjustment to the existing hostile and non-challant attitude of the society. The root of this attitute often lies in the prejudices, ignorance, and indifference on the part of the different sections of the society. Most of the problems of the handicapped are overlooked, not always because of lack of resources, but because of lack of a congenial attitude.

There is no individual howsoever severely disabled, who cannot undertake some kind of work. It is often forgotten that the disabled individuals still possess residual resources which are in tact. The handicap surfaces, when the disabled person attempts to achieve a goal for which he is not fully equipped. In all other circumstances, the handicap may not exist and the disabled individual is still a whole person. The disabled worker not only need vocational training and guidance but also a sympathetic attitude and congenial social atmosphere. On the occasion of the 29th anniversary of Independence of India. "Illustrated Weekly" (1986, August 19-23) brought out a special issue interviewing ordinary people from almost every walk of life. In such an interview, Hasmukh Shah, a 38 years old blind shopkeeper, spoke of his dream uttering, "I visualise that the Government will one day establish a research centre to study the abilities of the disabled. There is a lot of untapped talent in them" (p. 16). Another handicapped telephone operator, Raj Kumar, 27, expressed his desire, "to be a unique personality by my own hard work and resources. My dream is to join politics, but I don't have resources yet. One day, I hope to be an M.P."

Shri Lal Advani former Director of NIVH and Chairman of the Organising Committee of the Centenary Celebrations of Work on the Blind in India, held in New Delhi in January, 1987, also observed that, "I have been without sight for many years and I know what it means to be perpetually discriminated against because people don't believe you are capable of a lot of things". He also contended that the only way to remove this prejudice is through the concept of integrated education, where the sighted and the blind study together and get to know each other better (*Indian Express*, New Delhi, 1987, January 6).

Physical handicap does not mean a vocational handicap, and is in no sense related to the work adjustment of the disabled worker. As indicated earlier, a number of studies have suggested that disabled are as productive as the normal able bodied persons. The findings of Ghai and Sen (1985) also support the growing belief that disability does not interfere with efficiency on the job. A handicap is something that occurs under special circumstances, for example, when the disabled person attempts to achieve a specific goal. In all other circumstances he is as good as a normal person. Vocational rehabilitation would imply helping the handicapped individual to overcome his specific disability to achieve vocational success. It would provide the person a setting where he can play the role of a social being, experiencing accomplishment and reward and a sense of satisfaction.

Work experience is intricately related with the social need of the man; it has a positive bearing on the mental health of person concerned. Active participation in meaningful, socially relevant work is liable to bring in a change in the disabled person's relation to his own impairment. It has also an occupational therapeutic effect, enhancing his morale and positive attitude towards life. Non-involvement with productivity would only lead to enhancement of the feeling of inadequacy and would develop learned helplessness in the individual. Meaningful participation in work, on the other hand, would not only revitalise him, but also producing in turn, a healthy and realistic attitude. Work participation would become the most effective method of developing normal attitude towards life. Productive activity would enable the disabled to develop an optimistic outlook rather than exhausting his energy in the struggle with his own internal feelings of frustration and inadequacies.

A change in attitude at all levels, along with continuous development programmes for the welfare of the disabled, are the needs of the hour to ensure provision for optimum allocation of available resources. It is the moral responsibility of any civilised society to have a long range national policy, to make available the modern methods of preventing disability, through pre-and post-natal care, as far as practicable, to ensure minimum health requirements for every one, and to take utmost modern care to prevent accidents.

The Government and voluntary agencies, in addition, are to work in a co-ordinated manner to help the less fortunate individuals in finding a place for them into the society, and to work in unison for tracing the causes and prevention of disability, and identifying methods for providing rehabilitational facilities. The integration of the disabled into the society—thus poses a Herculian task of bringing the disabled into the mainstream of the society. This can only be achieved through sincere motivation for prevention, dissemination of information, and making provisions for rehabilitation at all levels by all concerned. Human society is dynamic; and it always thrives for mutual help and co-operation in its productive relationship, wherein every human being has a role to play, howsoever meagre it is.

The handicapped are an integral part of the society. They have the right to have a chance to maximise their potential, so that they can function as useful and productive members of the society. However, this goal can only be achieved through a gamut of an effective endeavours, such as community awareness and early identification, followed by early intervention and appropriate training, and development of positive attitude towards the handicapped, and a genuine concern for their total rehabilitation into the society.

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APPENDICES

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APPENDIX—I

The Action Plan*

The National Society for the Prevention of Blindness, New Delhi drew up a plan of following activities which were approved at the meeting of the Governing Council of the Society held on April 24,1982.

(*i*) Production of publicity and educational material on eye care and prevention of blindness including posters, pamphlets, folders, cinema slides, film strips and other such materials and their distribution.

(*ii*) Eye examination for early detection of visual defects with emphasis on rural population, school children, college students and industrial workers.

(*iii*) Holding of about 200 eye camps, 3000 operations and 1000 mini camps in a year.

(*iv*) Intensive membership drive.

(*v*) Opening of optical aid sale counters at various medical colleges, eye hospitals and regional institutes.

(*vi*) Intensifying research work at all levels including surveys in schools, colleges, industries, rural population on contact lenses, optical prosthesis and low vision aids.

(*vii*) Conducting research in rehabilitation of the blind.

(*viii*) Intensive publicity and educative drive on radio, television, press, film shows, etc.

(*ix*) Celebration of Prevention of Blindness Week from Oct. 2 to Oct. 9 every year.

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*Approved on April 24, 1982 by the National Society for the Prevention of Blindness, New Delhi.

(*x*) Holding of annual symposium on a subject that may be decided by the General Body/Governing Council.

(*xi*) Any other activity the Society headquarters or the State/District Branches consider desirable to achieve the objectives.

APPENDIX—II

UN Declaration of the Rights of Persons with Impaired Hearing

Introduction

1. Whereas in the Universal Declaration of Human Rights the peoples of the United Nations have asserted the principle of equal and inalienable Human Rights as the very foundation of freedom, justice and peace throughout the world.

2. Whereas in the said document the peoples of the United Nations have reaffirmed their faith in the fundamental Human Rights, in the dignity and worth of the human person, guaranteeing to each individual equality in freedom, dignity and rights as well as medical care, free education, free choice of profession and employment, freedom of association.

[other resolutions]

3. Noting the principles set forth in the declaration of the United Nations in regard to the "rights of children" and the documents of WHO and ILO concerning the rehabilitation of the handicapped, and of UNESCO concerning special and life-long education.

4. Whereas universally recognized human rights must be universally applied and that, therefore, persons with impaired hearing have the same rights as all other people.

5. Whereas the ideopathic deaf (*) are merely sensory handicapped without any involvements of a physical nature, can be totally rehabilitated through a proper education and

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*In this document the term "deaf" indicates a person attaining hearing impairment of any degree.

capable of playing a role in the community similar to that performed by other individuals, whereas, if deprived of an educational basis and hence in the impossibility of maintaining human relations they undergo physical disorders and are forced to lead a pure vegetative life without any interests and in direct conflict with the Declaration of Human Rights.

[education imperative]

6. Noting the necessity of pinpointing the basic human rights of deaf persons and urgently calling them to the attention of Governments, of the United Nations, of the specialized Agencies, of non-governmental international Organizations and of the Institutions, Bodies and Associations operating in the field of the rehabilitation and social re-entering of the deaf into normal life in order that the principal statements contained in the above mentioned international documents may turn into a live and operating reality.

The 8th General Assembly of the WFD proclaims:

Article 1

Deaf persons are entitled to benefit by the same universal rights as recognized for other people by the Declaration of Human Rights by that of the Rights of Children and by the documents approved by the General Assemblies of WHO, UNESCO and ILO.

[universal rights]

Article 2

Adequate and urgent steps should be taken, at both the national and the international level, to ensure that problems of deafness be dealt with in a modern approach, eliminating the obsolete notion of the limited possibilities of deaf persons, that is based upon old mental attitudes which are simply the result of prejudices that have been clearly proved to be wrong.

[modern approach, eradicate prejudice]

Article 3

In order that the deaf may actually enjoy the rights of other citizens under conditions of equality, it is imperative that the collectivities, by availing themselves of the laws and other measures envisaged in the said Declaration take all the steps required to protect the rights of deaf persons, so as to ensure their complete rehabilitation and participation in society.

[laws]

Article 4

(*a*) Young people with impaired hearing should benefit; by social security schemes, according to special criteria; by poly-specialistic early diagnosis; by special classes; free hearing aids; by a free choice in the field of vocational and educational courses; by special vocational training or higher education;

[young people's needs]

(*b*) the quality and the priority of education and teaching for deaf children must be ensured and granted on same terms as for the general public;

[quality of education]

(*c*) the possibility of freely testing all types of teaching methods and systems should be guaranteed, including the inalienable right to communicate in all necessary modalities, including fingerspelling, sign language, speech and speech-reading; parents of the deaf and associations dedicated to the welfare of deaf persons must cooperate in teaching and educational work.

[communication modalities]

Article 5

(*a*) The community at large with the cooperation and aid of the national associations for the deaf should take the necessary steps and do what is in their power to realize the legitimate hopes and objectives of deaf people, to help them achieve real independence within society under conditions of equality with the other members of society in the matter of rights and obligations;

[community assistance]

(*b*) They must work out, along these lines, specific and suitable programs geared to the social and economic conditions of the respective community.

[social economic conditions]

Article 6

It is imperative that those with impaired hearing be given the opportunity of finding a suitable occupation that may prove a source of personal gratification chosen from among the 1260 professions and trades in which the sense of hearing is not a requisite.

[suitable occupation]

Article 7

In particular, it is imperative that the deaf person be afforded the opportunity of communicating with other members of the community, breaking down whatever intervening barriers either through life-long education and, where practical through the use of hearing aids, or through the proper use of graphic and visual aids and the placing of written captions on the sound tracks of motion pictures, TV programs and interpreting services including removal of the age-old educational stigma against sign language.

[communication with community necessary]

Article 8

(*a*) To ensure that persons with impaired hearing may benefit by adequate rehabilitation work it is imperative that the community recognize the national organizations for the deaf as the basic instruments for protecting the rights of deaf people where all their experiences come together in the matter of family, instruction, vocational training, social and community life, life-long education and use of leisure time;

[national organizations]

(*b*) All necessary legal titles, as well as all other instruments and means, must be granted to the associations in order that they may provide for the moral and material help in the communities where the deaf work and live, with a view to helping them fulfill their hopes and carry on their work in a serene atmosphere, so that they may offer to society their talents and their experiences.

Article 9

(*a*) It is imperative that the community provide suitable instruments for the setting up of special institutes and schools and for the training of the scientific staff and of the staff specialized in the diagnosis, therapy, cultural and vocational training, life-long education, in the application and the use of hearing aids, of graphic and visual aids and in interpreting services.

[community services]

(*b*) It is also imperative that the governments and the international organizations simultaneously arrange for a mutual exchange of experiences, information and scientific innovations.

[international exchange of information]

(*c*) For this purpose the W.F.D., united with the national associations for the welfare of the deaf and leading experts in the world working in the field of rehabilitation and security for the deaf, is engaged in developing and offering its cooperation and advice with regard to study, research and exchange programs. The W.F.D. is engaged in the furthering of the initiatives directed at establishing an international institute on deafness.

[international institute on deafness]

APPENDIX—III (a)

UN Special Declaration of the Rights of Mentally Retarded Persons, 1971

In 1971, the United Nations have made a Special Declaration on the Rights of the Mentally Retarded Persons and they are:

1. The mentally retarded person has, to the maximum degree of feasibility, the same rights as other human beings.
2. The mentally retarded person has a right to proper medical care and physical therapy and to such education, training, rehabilitation, and guidance as well enable him to develop his ability and maximum potential.
3. The mentally retarded person has a right of economic security and to a decent standard to living. He has a right to perform productive work or to engage in any other meaningful occupation to the fullest extent of his capabilities.
4. Whenever possible, the mentally retarded person should live with his own family or with foster parents and participate in different forms of community life. The family with which he lives should receive assistance. If care in an institution becomes necessary, it should be provided in surroundings and other circumstances as close as possible to those of normal life.
5. The mentally retarded person has a right to qualified guardian when this is required to protect his personal well-being and interests.

6. The mentally retarded person has a right to protection from exploitation, abuse and degrading treatment. If prosecuted for any offence, he shall have a right to due process of law with full recognition being given to his degree of mental responsibilities.
7. Whenever mentally retarded persons are unable, because of the severity of their handicap, to exercise all their rights in a meaningful way or it should become necessary to restrict or deny some or all of these rights, the procedure used for that restriction or denial of rights must contain proper legal safeguards against every form of abuse. This procedure must be based on an evaluation of the social capability of the mentally retarded person by qualified experts and must be subject to periodic review and to the right of appeal to higher authorities.

This has been adopted by the International Leauge of Societies for the Mentally handicapped and it has been emphasised in the legislation that the mentally retarded person has the right to respect.

APPENDIX—III (*b*)

Report of the President's Committee on Mental Retardation Submitted to the President of United States

In a report to the President of America from the President's Committee on Mental Retardation, the following points have been made:

1. Retarded people have the same rights, legal and constitutional, as every other U.S. citizen, including the rights of due process and equal protection of the laws.
2. Retarded people can be more independent and can function more competently and responsibly than is

commonly believed-mental retardation and incompetency are not synonymous.

3. Full citizenship exercised by a retarded person in a community setting is possible and is in the public interest.
4. The right of equal access to quality health care, both medical and mental, and social services adapted to need.
5. The right to equal educational opportunity adapted to need.
6. The right to residential programs and other supportive services in settings most conducive to development and independence.
7. The right to equal employment opportunity and economic security.
8. The right to marry and bear children.
9. The right of due process and equal protection of the law in system.
10. The right to vote.

APPENDIX—IV

Declaration on the Rights of Disabled Persons*

The General Assembly

MINDFUL of the pledge made by Member States, under the Charter of the United Nations, to take joint and separate action in cooperation with the Organization to promote higher standards of living, full employment and conditions of economic and social progress and development.

REAFFIRMING its faith in human rights and fundamental freedoms and in the principles of peace, of the dignity and worth of the human person and of social justice proclaimed in the Charter.

RECALLING the principles of the Universal Declaration of Human Rights, 9/the International Covenants on Human Rights, 10/the Declaration of the Rights of the Child 11/and the Declaration on the Rights of Mentally Retarded Persons, 12/ as well as the standards already set for social progress in the constitutions, conventions' recommendations and resolutions of the International Labour Organization, the United Nations Educational, Scientific and Cultural Organization, the World Health Organization, the United Nations Children's Fund and other organizations concerned.

[other declarations of rights]

RECALLING ALSO Economic and Social Council resolution 1921 (LVIII) of 6 May 1975 on prevention of disability and rehabilitation of disabled persons.

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*As declared by UN General Assembly.

EMPHASIZING that the Declaration on Social Progress and Development 13/ has proclaimed the necessity of protecting the rights and assuring the welfare and rehabilitation of the physically and mentally disadvantaged.

BEARING IN MIND the necessity of preventing physical and mental disabilities and of assisting disabled persons to develop their abilities in the most varied fields of activities and of promoting their integration as far as possible in normal life.

AWARE that certain countries, at their present stage of development, can devote only limited efforts to this end.

PROCLAIMS this Declaration on the Rights of Disabled Persons and calls for national and international action to ensure that it will be used as a common basis and frame of reference for the protection of these rights.

1. The term "disabled person" means any person unable to ensure by himself wholly or partly the necessities of a normal individual and/or social life, as a result of a deficiency, either congenital or not, in his or her physical or mental capabilities.

[functional definition of disabled]

2. Disabled persons shall enjoy all the rights set forth in this Declaration. These rights shall be granted to all disabled persons without any exception whatsoever and without distinction or discrimination on the basis of race, colour, sex, language, religion, political or other opinions, national or social origin, state of wealth, birth or any other situation applying either to the disabled persons himself or herself or to his or her family.

3. Disabled persons have the inherent right to respect for their human dignity. Disabled persons, whatever the origin, nature and seriousness of their handicaps and disabilities, have the same fundamental rights as their fellow-citizens of the same age, which implies first and foremost the right to enjoy a decent life, as normal and full as possible.

[rights: respect for human dignity]

4. Disabled persons have the same civil and political rights as other human beings; article 7 of the Declaration of the Rights of Mentally Retarded Persons applies to any possible limitation or suppression of those rights for mentally disabled persons.

[civil and political]

5. Disabled persons are entitled to the measures designed to enable them to become as a self-reliant as possible.

[self-reliance]

6. Disabled persons have the right to medical, psychological and functional treatment, including prosthetic and orthetic appliances, the medical and social rehabilitation, education, vocational education, training and rehabilitation, aid, counselling, placement services and other services which will enable them to develop their capabilities and skills to the maximum and will hasten the process of their social integration or reintegration.

[all necessary treatment, service education, training, technical aids]

7. Disabled persons have the right to economic and social security and to a decent level of living. They have the right, according to their capabilities, to secure and retain employment or to engage in a useful, productive and remunerative occupation and to join trade unions.

[economic and social security]

8. Disabled persons are entitled to have their special needs taken into consideration at all stages of economic and social planning.

[special needs considered in national planning]

9. Disabled persons have the right to live with their families or with foster parents and to participate in all social, creative or recreational activities. No disabled person shall be subjected, as far as his or her residence is concerned, to differential treatment other than that required by his or her condition or by the improvement which he or she may derive therefrom. If the stay of a disabled person in a specialized establishment is indispensable, the environment and living conditions therein shall be as close as possible to those of normal life of a person of his or her age.

[family life]

10. Disabled persons shall be protected against all exploitation, all regulations and all treatment of a discriminatory, abusive or degrading nature.

[protection against exploitation]

11. Disabled persons shall be able to avail themselves of qualified legal aid when such aid proves indispensable for the

aid protection of their persons and property.

[legal aid]

If judicial proceedings are instituted against them, the legal procedure applied shall take their physical and mental condition fully into account.

12. Organizations of disabled persons may be usefully consulted in all matters regarding the rights of disabled persons.

[organizations of disabled]

13. Disabled persons, their families and communities shall be fully informed, by all appropriate means, of the rights contained in this Declaration.

[information]

9/General Assembly resolution 217 A (III)

10/General Assembly resolution 2200 A (XXI), annex.

11/General Assembly resolution 1386 (XIV).

12/General Assembly resolution 2856 (XXVI).

13/General Assembly resolution 2542 (XXIV).

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